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PAPER

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for Paper and Pulp Mills

VOLUME XVII

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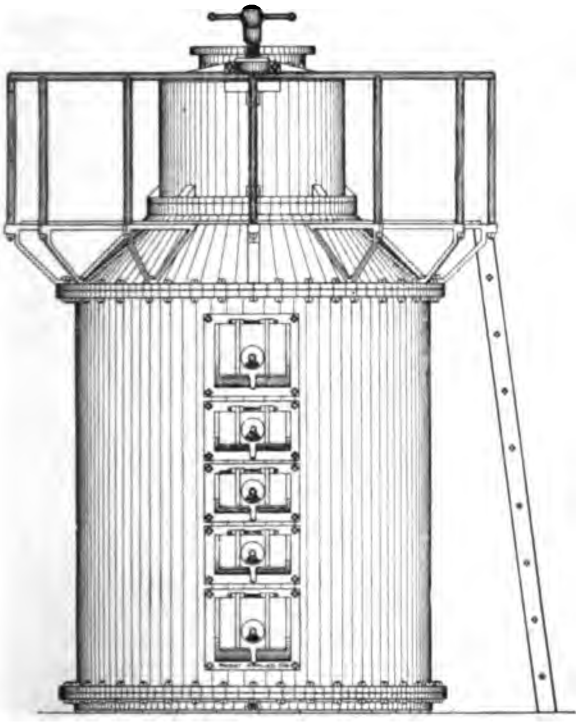

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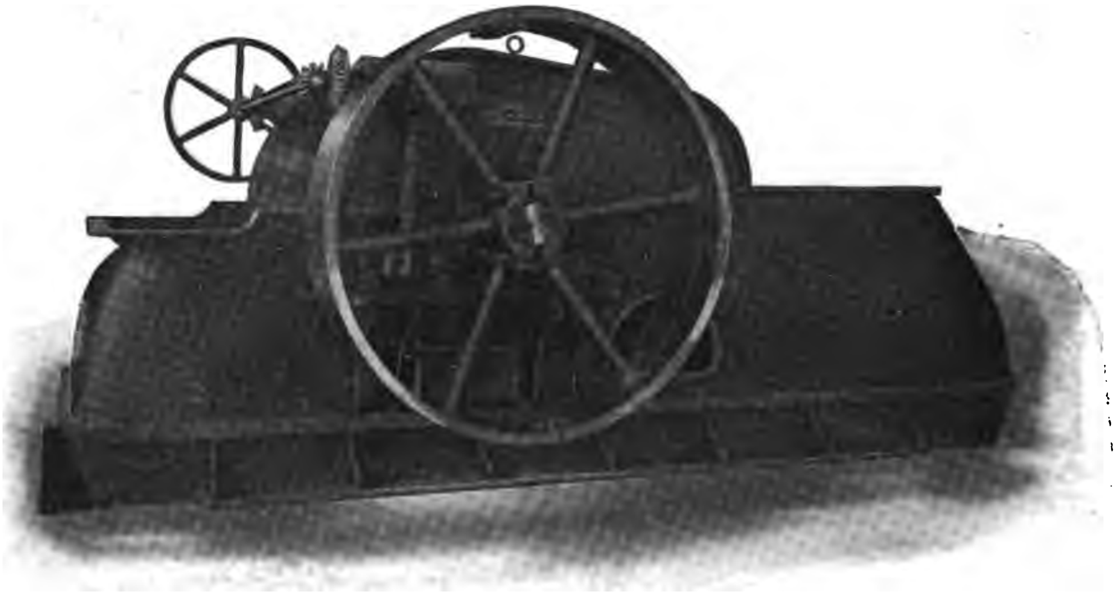

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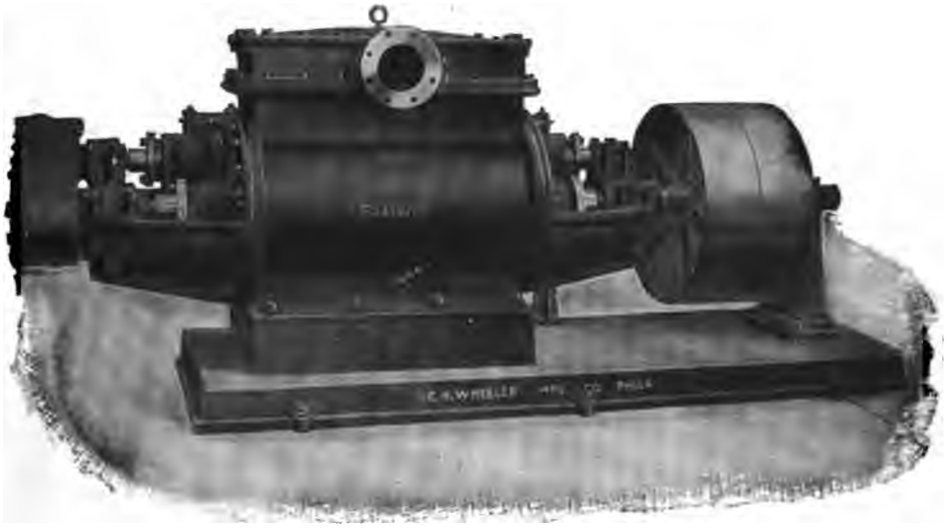

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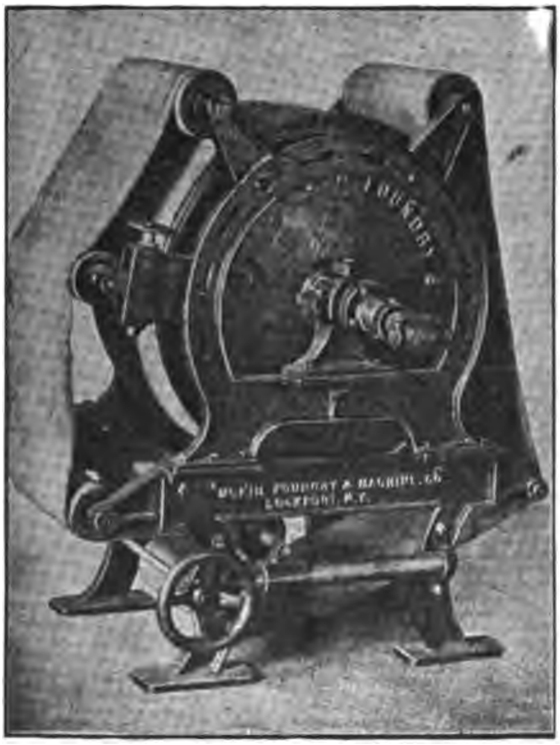

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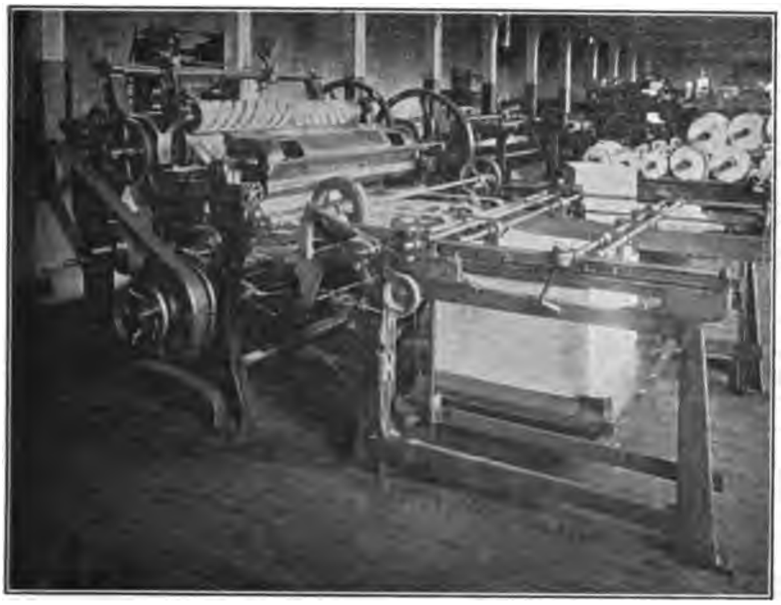

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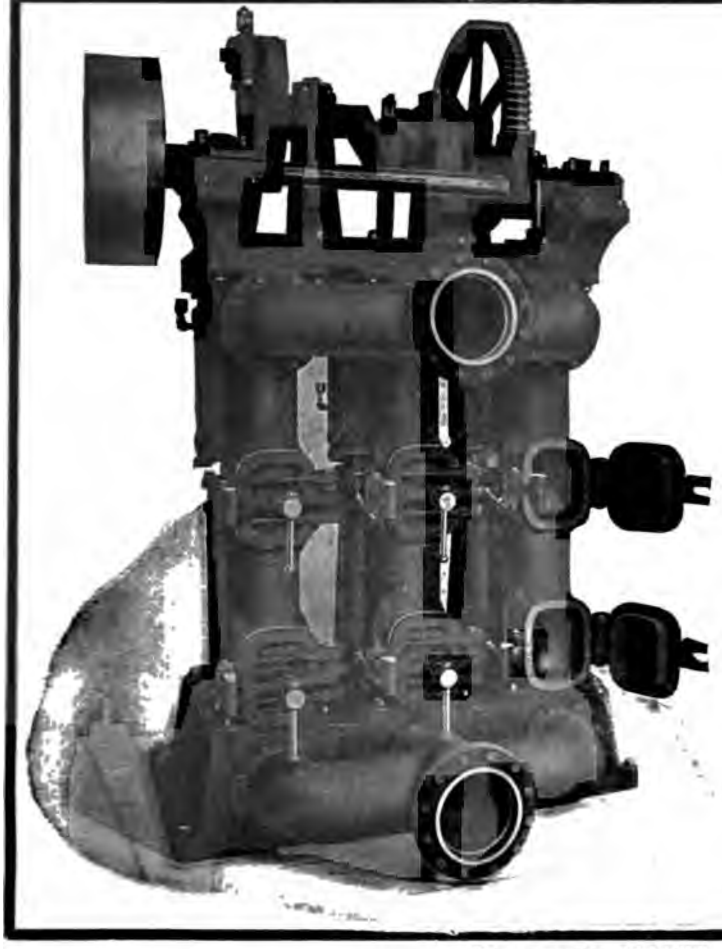

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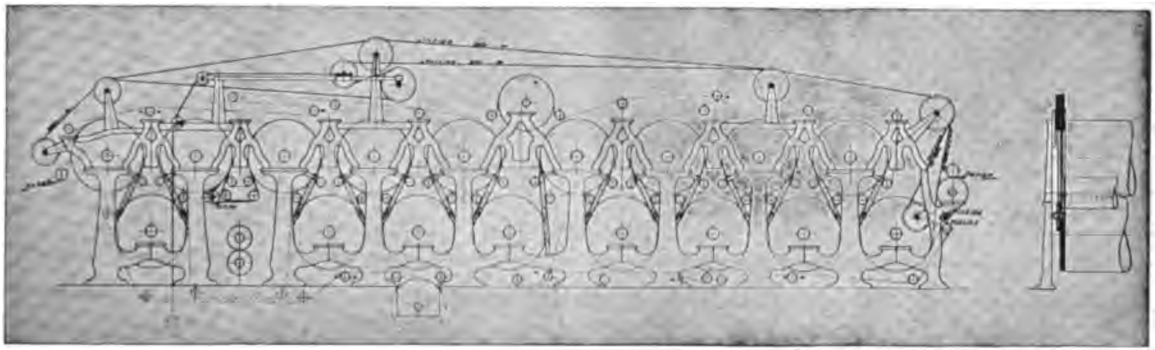

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Standardization and Control of Mill Processes

Suggestions for the Technical Section of the American Paper and Pulp Association

By OTTO KRESS

In Charge, Section of Pulp and Paper, Forest Products Laboratory, Madison, Wis.

MANUFACTURING conditions are changing rapidly and for the pulp and paper industry of this country to maintain its proper place a more thorough control of manufacture and standardization of methods of analytical control are absolutely essential for increasing efficiency. Work in the proper direction has been started by establishing the Technical Section of the American Paper and Pulp Association, which has in its constitution the following articles:

ARTICLE II. Objects: The objects of the Section shall be:

1 To stimulate interest in the science of pulp and papermaking.
2 To provide means for the interchange of ideas among its members.
3 To encourage original investigation.

It has appeared that the new Technical Section could take up as one of its activities the systematic study of the standardization of methods of control of raw, intermediate, and finished products and of general mill control. Other large chemical industries such as the leather, fertilizer, steel, agricultural, gas, etc., have already founded organizations for this definite purpose with a remarkable increase in the general efficiency of these industries. The present situation in the pulp and paper mills is that each organization having a laboratory and chemical control of its plant is working independently and using such methods as it believes best.

There are in the United States sufficient men in the mills, research and private laboratories interested in the advancement of the pulp and paper industry who would bear their share in the standardization of methods of analysis. Various committees of chemists especially chosen for familiarity with their particular branch of the field could work out the details essential for the standardization of such a method. Such committees would consist of three to four men and a chairman and would independently carry on investigations on standard samples.

A preliminary outline of such a classification would comprise work on the following:

1—Sulphate pulp.
2—Sulphite pulp.
3—Soda pulp.
4—Chemical control of bleach and bleaching.
5—Standards for alum, rosin, and other chemicals required in pulp and paper work.

As an example, the control of the raw materials and of the process of manufacture of sulphite pulp might be considered. This would include the standardization of methods of analyzing the sulphur or pyrite used, the method of controlling the manufacture of acid, including the combustion and control of the sulphur dioxide so as to yield the gas of best percentage, and control of the sulphur trioxide formed, further control of the actual manufacture of acid liquor and the mill control of the cook, etc.

By the standardization of such work, a uniform method applicable to all mills could be worked out which would then be presented to the members of the association through the official organ and would then become, on the vote of the members, the official method for the coming year.

In a great many cases, extremely varying results are obtained by chemists working on the same material. This is due to the fact that different methods are employed and that so many of the determinations to be made are of the nature of proximate organic analyses on which the same method must be used to obtain concordant results. Such methods as are adopted would, of course, be the official methods for the year but could be changed by vote of members of the section as occasion warrants.

The preliminary work will naturally be very large, but by dividing this work, the burden should not fall too heavily on any one. The Forest Products Laboratory, of Madison, Wis., is anxious to cooperate and do its share in this movement.

In conclusion, it seems to the writer that the pulp and paper industry is lagging behind other industries in its scientific control and advancement. With keener competition from abroad and advance in cost in all departments of manufacture, we should prepare for the future by increasing our efficiency and real control of all the steps in the manufacture of pulp and paper.

The Philosophy of Management[1]

How Individuality May be Imparted to the Industrial Unit and Its Necessity

By ROBERT B. WOLF

Manager of Manufacturing, Burgess Sulphite Fibre Company, Berlin, N. H.

ABOUT three years ago I was asked by the Committee on Economic Administration of Industrial Establishments of the American Society of Mechanical Engineers what I considered to be the "new element in the art of management." At that time, while the general principles of what I wish to present for your consideration today were in my mind, they were more or less indefinitely formulated and I hesitated to give them expression. Since then, however, I have had ample opportunity to verify my earlier conclusions and have put many of them into actual practice.

In presenting for your consideration my conception of progressive industrial organization, I do not wish to have it understood that I am attempting to elaborate on the methods of Mr. Taylor and others, nor do I wish to detract in any way from the splendid work done by these men. I hope that this paper, however, will show that there is a relationship between the various methods and will point out how they are all forward steps in the great movement which increases man's productiveness and his creative powers.

In order to give you my ideas more clearly, a general review of present conditions in the industrial world seems to me necessary.

Many of you have undoubtedly had more or less opportunity to observe the deplorable inefficiency of most of our large industrial concerns, especially those commonly known as trusts, where a number of formerly independent plants have been united under one common management. The plants are usually scattered over a considerable area and the central offices located in some commercial center.

The first step in the organization of these corporations has usually been the removal of the resident owners and managers from the various localities to the central offices and the subsequent attempt to carry on the functions of management by the superintendent and heads of departments. These men, in most instances, not having had any real knowledge of manufacturing costs and profits, are, of course, incapable of conducting the business intelligently. It, therefore, becomes necessary for the central office to perform much of this work for the various plants.

As a rule, no final manufacturing costs are made at the plant and as a consequence those who are held directly responsible for the cost of producing and who have the most intimate knowledge of operating conditions have not a very intelligent basis upon which to work. They can receive very little help from the former managers; in the first place, because these managers are so far removed from the actual conditions that their judgment is affected; and in the second place, their interest is divided among so many different plants that, in the very nature of things, they cannot give the various problems the time required for intelligent consideration.

A realization of the impossibility of keeping close watch on details at a distant plant is perhaps responsible for the removal of some of the vital functions of the individual plants to the central offices, such as Purchasing, Selling, Construction and Maintenance, Cost-keeping, etc.

A central purchasing department has undoubtedly many advantages, but as ordinarily conducted in large corporations these advantages are almost entirely offset by the obstacles placed in the way of free choice on the part of the mill organizations and the consequent discouragement of individuality in making selections. The impossibility of handling all of the purchases by one capable man necessitates delegating a lot of minor purchases to subordinates, who have no real knowledge of actual mill requirements. Even though they know what is required in one mill, they cannot know in others where conditions are not the same.

The purchasing agent should have full power to build up an efficient organization for keeping informed of the market conditions, so that requisitions from the mills can be handled with promptness and dispatch. The department should be able to furnish full, complete information to the individual plants whenever they need it in order to properly purchase supplies. It should encourage the mills to furnish specifications and welcome attempts on their part to keep comparative records for the purpose of determining the mest materials to use. It should always conduct itself toward each separate organization as if it were an outside firm, employed to give advice and assistance in every way possible to enable purchases to be made economically. Each plant should receive frequent reports from the purchasing department, giving complete information about materials found to be giving good results in other places. This one feature alone would make it immensely valuable to the parent corporation.

I have dwelt upon these details merely to show how greatly a central purchasing department can aid if put in its proper relationship to the various plants, namely, that of servant rather than the equal of the manufacturing department. Certainly nothing can be more important to manufacturing than the proper purchasing of materials which are to be converted into the finished product or which are needed to effect this conversion.

---

[1] A paper presented at the Boston Meeting of the Society to Promote the Science of Management, May 21, 1915.

Let us take accounting next. Why are accounts kept and what is their purpose? In the last analysis, accounts are records of the progress of accomplishment and are used to enable those in charge of the corporation's affairs to decide upon the future policy to pursue.

Why, then, should any attempt be made by the central office to keep accounts that are of strictly local interest to the individual plant? And why even attempt to dictate how and when these accounts should be kept? Insofar as comparisons between individuals plants are concerned, this is justified, but no further, and even in this case it should not be pushed to a point where comparisons which local conditions at the plants demand are not allowed.

The foregoing should not be misconstrued to mean that I believe a central accounting system for corporations is not necessary or desirable, for it most certainly is. The accounting department should confine itself, however, to such accounting as is of interplant nature, and not attempt to dip into local conditions, except in an advisory capacity.

One serious mistake often made is allowing the accounting department to practically control the mill offices. These, for reasons to be pointed out later, should be entirely under the control of the local management, subject, of course, to frequent auditing by the accounting department.

The central office of the corporation needs only resultant figures giving a true record of the progress of each plant, and made in such a way that comparisons can be easily made, the local plants being required to furnish any figures called for at all times.

The selling, in most cases, can be handled by the central office much better than any other function; indeed, the main purpose in forming large corporations was primarily to stop ruinous competition between plants, especially in periods of slight demand. There should, however, be much closer touch between the selling department and the mills and a much more intimate knowledge of operating conditions by the salesmen. The degree of this intimacy is, of course, one of the important things to be decided by the chief executive.

"Maintenance and construction" is another thing which should be touched upon. There is usually much damage done to the individual plants by decisions of "absentee" engineers, whose knowledge of the plant conditions cannot be of such an intimate nature that they can make intelligent decisions. This very often actually retards progress in the organization and serves to discourage individual effort upon the part of the local mill management.

A high-grade consulting engineer employed to devote his entire time to the corporation's affairs would be a very valauble asset. He should conduct himself toward each individual plant exactly as he would if they were all independent establishments and his own clients. There would be this very important difference, however, which would mean much greater freedom of action, *i. e.*, he would be entirely free to give each plant the benefit of his experience in others, and in this way would be a constant, highly intelligent means of exchanging ideas of mutual interest and benefit.

Of course, I realize that most of this a review of things already known to many of you, but this review seems to me to be necessary in order to properly present what, I hope, will be more constructive in nature.

I am now going to make a plea for the development of plant individuality. This is not merely a return to old conditions existing prior to amalgamation, but a regaining of all the advantages of the old order of things with the additional advantages of the new.

To begin with, we must have managers in our plants who have real executive ability and who are not selected because of their particular skill in certain manufacturing lines. These managers should have power to select and form their own organizations, and for this reason must be men who have a broad realization of their unity with the parent corporation. They should be the kind of men who are ready to receive suggestions and receive them gladly and at the same time have individuality enough to reject those things, which from their knowledge of conditions, seem unwise to incorporate.

Having selected this type of manager, the work ofveloping the organization's individuality can begin.

A good organization must have the following elements:

(1) A certain definite function to perform.

(2) A definite central organization of control.

(3) A thorough system of recording all events which take place in the performance of the work.

(4) Means for vitalizing certain subconscious functions of control so as to produce prompt, intelligent action without direction from the conscious mind.

(5) Means for making newly acquired accomplishments automatic.

In other words the question resolves itself into developing in the plant as a unit all of the functions so wonderfully exemplified in the human body.

Recognizing the principle that any organization to be progressive must have individuality, let us see how this individuality can best be built up. To do this we must have some knowledge of what constitutes individuality, and I know of no better way to illustrate this than by showing how unity of action is maintained in the organized activities of the physical body.

The mechanism which enables the human body to act as a unit is the nervous system, which controls, either consciously or subconsciously, every bodily function. We have thousands of afferent (or in-going) nerve paths leading from every portion of the body into the central nervous system, where every external impression is finally recorded in the cortex of the brain.

The end organs, which enable us to see, hear, smell and taste, all have their nerve paths leading to the brain, and we find upon analysis that what we once called the sense of touch is wonderfully differentiated into various senses, as, for instance, the thermal sense (of hot and cold), the pressure sense and the sense of pain, each conducted inwardly by a special set of nerves, which respond only to its particular kind of stimulation.

We find that all of the nerve paths lead to the brain through various relay stations, or nerve centers, for an intelligent kind of sorting or grouping of the impulses that take place, so that the final presentation to the brain is in proper form for recording.

We find also that while all impressions are in some way recorded in the cortex of the cerebrum, many of the nerve impulses producing them (in nerve centers through which they pass) act directly upon certain efferent (or out-going) nerves, whose function it is to produce musculomotor action in the body; this resultant action taking place before the conscious mind has had time to direct it.

A study of the cortex of the brain, which is the seat of all consciousness including memory, self-consciousness, and volition, reveals a wonderful mechanism for coordinating and relating our sense impressions and musculomotor action: for instance, the sense of violin playing has its seat in close proximity to the musculomotor center which controls the motion of the arms; in other words, the place where the final recording of an external impulse takes place is close to and always associated with impulse terminals of a similar nature and at the same time with those nerve cells which can enable the individual to further the action required for the proper development of an accomplishment.

In addition to the foregoing, which has to do principally with the conscious action of the mind, we find a wonderful control of the bodily functions by the brain, which keeps the various organs in harmonious relationship with each other. When, for instance, the environmental conditions demand heavy muscular action on the part of the individual, and there is a waste of muscular tissue and a demand for its removal, the nerve which accelerates the heart action is stimulated and increased circulation results, enabling the blood to carry material for restoring the body tissues to their normal condition and carrying away waste products. At the same time that the heart is accelerated, the lungs are caused to increase their rate of respiration through stimulation of the nerve accelerating the motion of the diaphragm. Many other things too numerous to mention occur simultaneously, such as the operation of the sweat glands to assist the organs of elimination to carry off the waste products, etc.; but enough has been stated to illustrate the point I wish to make, namely, that the whole unity of action is made possible only because of the marvelous control exercised over the body by the nervous system. It is only when this control is lost, through disease or injury, that the unity of action and consequent definiteness of purpose upon which progress depends is impaired.

In order to understand the reason for the simplicity and wonderful unity of the nervous system in spite of its apparent infinte complexity, it is necessary to describe its three great subdivisions:

The *sympathetic system.*
The *spinal system.*
The *cortical system.*

Take first the sympathetic system, which is the seat of those almost entirely automatic functions over which the conscious mind has only very indirect control. This consists principally of the efferent (or outgoing) nerve cells, whose bodies are collected into ganglia, or groups, located outside of the spinal cord, principally in the head and in the body cavities. For instance, the nerves which stimulate the growth of the hair, the fingernails, and even the growth of the body itself; the vasoconstrictor and vasodilator nerves controlling the contraction and expansion of the blood vessels; the nerves controlling the beating of the heart and thousands of other functions are all a part of the *sympathetic* nervous system. This is so designed that it constantly reminds and, in a sense, releases the forces required to keep the routine work necessary to our preservation in motion.

Next let us take the *spinal system,* which is located inside of and protected by the backbone. This is the seat of those semiautomatic functions over which the brain has a direct and constant control. These functions—such, for instance, as walking or breathing—after once being set in motion by the will, acting through the brain, or conscious mind, are kept in motion by the nerves in the *spinal* cord without the conscious effort of the individual. It is also the seat of the so called "reflex muscular action," which causes the body to act involuntarily for its own protection, when necessary.

The fundamental difference between the subconsciousness of the *sypmathetic system* and the subconsciousness of the *spinal system* is that the stimulating nerve power of the latter is more or less directly under the control of the conscious will, while the sympathetic system performs its work independently of it.

Finally, let us describe the *cortical system,* which is really an outgrowth of the spinal system, surmounting it, coordinating and controlling its action. The upper portion, or cortext of the brain, is the seat of the memory, where all the sensory impressions from every portion of the body are brought by the afferent (or ingoing) nerve paths, and from which originate the efferent (or out-going) impulses, which keep the body functioning properly in accordance with its environment. The will, having the power to recall and use the stored-up records in the brain, can, by means of communicating nerve fibers in the cortex, direct the organism through its outgoing nerves to useful efforts of progressive accomplishment.

Having described the functions of the three main divisions of the nervous system, it now remains to sketch briefly the relationship of each to each other.

The *sympathetic* nervous system is connected, through what the anatomist calls the "preganglionic nerves" with the brain and spinal cord and comprises the outlying efferent (or out-going) nerve cells, through which the impulses from the central nervous system finally reach the involuntary muscles and glands; the spinal cord connections coming out between the spinal vertebrae, and the direct brain connections being made through the cranial nerves coming down from the cortex .direct. The so called sympathetic nerve cells are connected into ganglia (or groups) located as beforementioned in the head and body cavities. The various nerve plexes, such as the pulmonary and the solar, are also a part of the *sympathetic* system, and the connections into these ganglia and plexes, coming from both the cranial nerves and the spinal nerves, complete the cycle which produces a harmonious working together of the parts and a continuous correcting or complementing action.

I could go on almost indefinitely with illustrations of this nature, but enough have been given to bring out the point I wish to make, namely, that the human body is an organization of many elements (and I might say of many personalities, for each cell has individuality of its own, and many can live outside of the body itself), all working together in harmony, under the direction of the will, acting through the nervous system.

If anyone wishes to inquire into the forces which have led up to the individual development of mankind, he will find himself at once plunged into the realm of psychology and mental philosophy. I can heartily recommend such a course as immensely profitable and of practical value.

The five important facts, however, that have to do with the subject in hand are:

(1) That the human body is such a wonderful organization because it is the product of the forces of creation, acting through millions of years of evolution.

(2) That its capacity for progress depends upon the maintenance of the unity resulting from this creative evolution and upon a conscious recognition of this unity.

(3) That this unity would not have been possible without the development of the nervous system.

(4) That the conscious intelligent progress made by mankind could not have reached its present level until in the process of evolution a mechanism had been built up in the nervous system itself capable of recording the various impressions which the senses are con-

stantly receiving.

(5) That the recording of past events, with the power of consciously recalling them for the solution of problems immediately confronting it, is absolutely essential to its development.

Now, what I want to point out is that inasmuch as man's progress depends upon the perfect coordination of his forces to produce unity of action, we have no right to expect an industrial organization to make progress (which it must do as a unit) without the establishment of a conscious coordinating mechanism similar to the nervous system in the human body.

Is it not a fact, then, that the success of scientific management, properly applied, is due to its action in building up the individuality of the organization? I think there is not the slightest doubt on this point, nor is there any doubt that the failure of some organizations to put their business on a scientific basis has been caused largely by the fact that they have not used the mechanism of scientific management for the purpose of perfecting its unity.

I am personally very familiar with one large, flourishing establishment, which has no less than one hundred recording and one hundred indicating instruments, representing twenty or more different kinds of sensory impressions, such as temperatures, pressures, colors, gas compositions, liquid densities, liquid levels, etc., all required in order to maintain uniformity of product and economy of operation.

Recognizing, then, these various recording devices and instruments which come in direct contact with the work as the end organs of newly acquired senses, we must conduct the impulses resulting from the instrumental contacts through suitable channels to the place where all things affecting the organization are recorded.

We must have, in other words, an organization memory, which is entirely apart and separate from the memory of the various individuals of the plant. It is only by having such a place of record, where all things affecting the organization as a unit can be recorded, that a proper perspective can be obtained.

A gradual development of such a memory by the addition of new senses will tremendously accelerate the rate at which the organization will progress, just as in the individual the addition of new concepts to the brain tremendously increases its reasoning power.

In designing the recording mechanism, or plant memory, it is best to use graphical methods in order that comparisons may be easily made. Figures, it must be remembered, are static, while curves show tendencies.

By the use of graphical records, things affecting each other can be brought in close relationship, enabling those whose business it is to control the manufacturing process to see at a glance what action is necessary on their part to produce the best results, not only with respect to their own department, but with respect to the whole plant.

If I had time, I would like to describe to you in detail a chart room containing over 1,400 separate plotted records, all used to record the operations of a single plant. These charts are so arranged and grouped as to be instantly and at all times available for study by those directing the organization's activities. This department is the plant memory and corresponds to the third and last acquired great subdivision of the human nervous system—the brain.

Having described the memory part of the organization as corresponding to the cerebrum of the brain, let us now consider the part corresponding to the spinal cord, which is the seat of what we will call the vital or intelligent subconscious action. In our industrial organizations this corresponds to the control by the department heads and foremen, who are constantly directing and setting in motion corrective forces tending to keep the organization functioning properly. This is analogous to what the anatomist calls "reflex action."

Now, in the average organization, much of the work is done in this manner without direction from the central conscious mind. There being no plant memory, this is the only way it can act and progress is necessarily extremely slow, as it is, for instance, in the insect world where the spinal system is not surmounted by a brain.

As the coordinating effect of a brain, however, enables the spinal cord to do much better work, so does the addition of a plant memory tremendously aid by intensifying the subconscious action; as, for instance, when it acts through its executive branch to stimulate the creative energy of the foreman, subforeman, and even individuals, by giving them a record of the performance of their work and by making comparisons with others. By this means a spirit of emulation is built up which makes each man desire to do good work of his own free will. The urge comes from within instead of from without. The result of having this spirit permeate the organization means an entire reversal of the old order of things, where the chief executive uses his creative force to make his department heads carry on their work and they in turn pass the impulse along to their foremen and so on until it reaches the last man in the organization, where it is felt very faintly indeed.

The new order carried out to its ultimate point means that each man in the organization is interested because those above him have had brains enough to furnish him with the means of recording his progress. He then feels that he is creating something and is happy. His foreman, being released from the tedious work of making his men work against their will, finds stimulation in directing the forces he feels flowing upward for him to direct. As a consequence, he becomes creative in his work.

The department head has the same experience and finally the chief executive finds himself directing the forces looking to him for leadership and he himself becomes creative and no longer wears himself out by trying to drive his own creative force into the men in his organization, thereby depleting his own supply.

Finally, let us take that part of the organization corresponding to the *Sympathetic Nervous System,* for it has a very important place in our scheme of rounding out the organization's individuality. Much of the organization's activity must become automatic, otherwise our capacity to acquire new accomplishments will be greatly limited. Man's progress in the world consists largely in the conscious acquisition of new talents and making them subconscious, or automatic. We begin this when we, as children, consciously learn to walk and later in life, perhaps, learn by dint of hard work, to ride a bicycle. Once having learned these things, we no longer have to think about them, but our minds, while we are doing them, are released for other purposes.

Now, in our plant organization there is no better method of installing a subconscious control than by the use of a Tickler system, as it is used in the Taylor system of Scientific Management. This consists simply of a cabinet with a drawer for each month in the year, containing substantially built folders for each day of the month. In these drawers are placed the various memoranda, to be taken out and distributed on the proper dates, reminding those to whom they are addressed of certain routine work to be done. A system, so safeguarded as to keep the conscious mind of the organization informed when a departure is made from methods decided upon as best, or made so responsive to changes in plant conditions as automatically to allow the executive branch to know when conditions should be changed, is fulfilling a long felt want. I can describe to you a thousand ways in which such a system is serving a large industrial concern and enabling the conscious mind of its executive, department heads, foremen and others to do creative work for its advancement.

There are many other functions which can be brought into use, all of them having exact counterpart in the human body, nor is there any end to the elaboration of methods. I will not weary you, however, with any more details.

I want now to state, in as few words as possible, what seems to me are the essentials of organization work. The first thing to decide upon is what constitutes individuality. The units must be no larger than they should be to function properly as units in the performance of a common task. If the corporation ownership is large, divide it into these units and make them come into the parent organization as complete units.

Having determined your units, give them individuality in the following manner:

(1) Furnish them with means of becoming conscious of themselves and of their environment, by building up a system of scientific registration and control similar to the nervous system of the human body.

(2) Provide a definite central place for recording all of the various sensory impressions furnished by the recording mechanisms, arranged in such a way that comparisons of the whole progress of the plant can be made with the least possible effort, exactly as it is done in the brain of the human body.

(3) Provide for the subconscious control of the newly acquired accomplishments as exemplified by the *Spinal* and *Sympathetic* nervous systems in man, thereby liberating the conscious mind to deal with new problems of a creative nature.

If these three functions of management are kept in mind there will be no danger of becoming confused by the mechanism of control, for it will always be seen to be what it really is—namely, the nervous system in progress of development in order to establish greater unity of organization.

Furthermore, a thorough recognition of these three cardinal principles for establishing unity of action is a perfect safeguard against oversystematizing. The human nervous system is extremely flexible and always more or less under the control of the will and it is of the utmost importance that the mechanism for controlling and unifying an industrial organization be equally flexible and capable of being modified.

An organization filled with red tape is like a man who has lost his will power and is dominated by his appetites and desires. He cannot become efficient until the will regains control and restores unity of action.

Any system so designed that it does not permit the intimate contact of employer with employee and therefore does not fully recognize the value of the human touch is doomed to failure.

I sincerely hope that in outlining this philosophy of management I have indicated to you how an organization can be made so conscious of itself as to realize at once when the human units, of which it is composed, are not being given the proper opportunity for self-expression; or to realize as well when these same human units are not receiving the sympathetic help they need for their own individual development.

Men can be productive only when they take an interest in their work and they will not take this interest unless those entrusted with the direction of their efforts realize that they must teach them constantly how to exercise their creative powers.

In conclusion, I wish to assure you that this paper is not an academic discussion of what might be done, but as true a picture as I can give you of methods I have actually used successfully.

Artificial Daylight in Practice

ARTIFICIAL lights in general present serious variations from daylight and sunlight in their rendering of the colors of materials. The practical disadvantages of this have lead to numerous attempts to correct the deficiency and success was obtained finally, according to M. Luckiesh (*Electrical World*), by the development of colored glass for use with the gas-filled tungsten lamp. Sunlight and north skylight are both imitated. For accurate color work, north skylight is almost universally used; to obtain the same light from the gas-filled tungsten bulb, a glass screen is used in which five coloring elements are balanced. The glass is pressed to a definite thickness in order to keep the light accurately standardized. The efficiency of the lamp is cut down by passing the light through this glass, but its original efficiency is so high that the cost of the light for the uses to which it is put is not excessive.

For more general lighting, however, where accuracy is not required to the same extent but where lighting of a better color value than that obtained from ordinary units is desirable, there has been developed a colored glass which will change the light from the gas-filled tungsten lamp into that of noon sunlight. The efficiency of these units approximates that of small vacuum-filled tungsten lamps and is therefore commercially available. Blown glass is used, since small variations are not objectionable.

Within a year about a thousand artificial daylight units have been installed in many different fields. Paint and varnish factories and paint shops, drygoods, millinery and department stores, have installed color-matching units and rooms. Drygoods, paint and wallpaper stores and millinery stores have lighted whole floors with sunlight units, and tailor shops use them in work room, display room and show window.

Skylight units are used for easel work by artists, and over color-printing presses in lithographic work. Sunlight units have been installed for night art classes and for lithographing art rooms.

The units are used in textile mills for judging dyed goods, in paper mills for mixing dyes and in oil refineries for inspecting the color of oils. They have met with favor in laundries, in art showrooms and for sorting tobacco in cigar factories.

Unexpected applications of them arise, as in hospitals for the operating room and for diagnosing manifestations of skin diseases. They are commended for matching artificial teeth and buttons. A greenhouse for a night horticultural class is lighted with them. Chemical work, diamond purchasing, microscopic work and the equipment of hotel sample rooms are other fields of employment. Salesmen have requested a portable outfit to carry in a sample trunk for use in showing goods at night, and in offices, although color distinction is not of primary importance, the sunlight units have met with favor.

Foreign Dye Industry Fostered by Tariff

Where the Blame Lies for the Shortage of Coal Tar Dyes—Notes on Tariff History

IN the *Journal of Industrial and Engineering Chemistry* Dr. B. C. Hesse quotes two statements that have been published which, in effect, throw the blame for the present shortage of coal tar dyes upon the American chemist and the manufacturer of chemicals, and he follows these with extracts from the reports of various tariff commissions and similar committees from 1882 to forward that show "beyond doubt practically every argument advanced in 1914 as to why coal tar dyes should therefore *have been* made in this country was previously presented to Congress in support of the view that they *should be* made here."

The quotations are as follows: In 1914 the textile industry said to the chemists of this country:

"The appeal of the textile industry to the chemist at present is: 'We need dyestuffs, so get busy and make them; don't hem and haw, and make excuses, but get right on the job.' "—*Journal of Industrial and Engineering Chemistry.*

Again in 1914 the dye users said to the chemists of this country:

"Users of dyestuffs in quantity are more or less indignant over the fact that manufacturers in this country are dependent upon other countries, and Germany particularly, for the dye supply. They ask: 'Why haven't our chemical companies experimented sufficiently to produce synthetic dyes, pharmaceutical products, essential oils and synthetic perfumes, in the production of which Germany seems to have had almost a monoply?' "—*Wall Street Journal.*

The extracts from the evidence taken before the various commissions show that an attempt was made to manufacture coal-tar dyes in this country as early as 1866, and that at the time of the first evidence quoted, in 1882, there were several concerns endeavoring to establish the manufacture of dyes, and were expending what, for that time, were considerable sums of money. In these tariff investigations the condition of affairs was clearly stated, and the assistance of the Government was asked in the establishment of the industry, but the representations of the foreign manufacturers, many of which were palpably misleading, and of the textile manufacturers who used the dyes—these same men who are now so indignant because American chemists are not producing the dyes they need—were of more weight with Congress, and the American dye manufacturer was abandoned to the mercies of his foreign competitor.

In these investigations great weight was laid on the small size of the establishments then experimenting with dyes, and this appears to have impressed the commissions, who entirely ignored the fact that the competing German factories were still smaller only a few years before, but under intelligent governmental encouragement had rapidly grown to a position dominating the trade of the world.

The benefits to the consumer, the textile manufacturer, by a reduction of the tariff were grossly exaggerated, for it was shown that while on the one hand the textile man consumed only between five ounces and one pound of dye to one hundred pounds of his goods, on the other hand even the small American establishments of 1882 forced a considerable reduction in the price of some of the imported dyes. A quotation from a statement by one of the manufacturers, made before a commission at the time, is instructive: "Some efforts have been made to show that the present rate of duty on these dyes is very onerous to the consumer and the public; such is not the case, however, for two reasons: first, because the branches of business consuming them are themselves protected by almost prohibitory duties, and lastly and chiefly, because the quantity of dye used per pound of cloth or yarn is almost infinitesimal. Taking the case of fuchsine, for instance, a color costing only $2 per pound, but four or five ounces are required for every 100 pounds of carpet chain; this means a tax through present duties of only three or four cents on an average size rag carpet. The fact is that while a removal of the duties would deprive the government of a large revenue and kill the home industry outright, no one class, except the foreign manufacturer, would be benefited. This was shown a few years ago in the case of artificial alizarine. By the assistance of the consumers the duty was removed from this article, ever since which time the said consumers have had to pay about as much again for the article as their foreign competitors, and the large revenue that would have resulted to our people by a duty was absorbed by the foreign manufacturers and their agents. It is, therefore, desirable that neither the government nor the consumer be again inveigled into such action on behalf of a wholly foreign industry."

Another quotation from the same witness clearly illustrates the trend of affairs at that time, and they are are not altogether changed today: "Strange to say, although we have all of the chief crude materials in this country, it is only within the last two or three years that the production of colors exclusively from our native products has been attempted. Prior to this time a few small works had been engaged in the manufacture of a few simple coal tar dyes, but they worked exclusively with a crude material, combined and manipulated by European skill and imported into this country, duty free, in a half-finished condition, namely, in the form of arseniate of aniline. To produce this material American benzoles and other coal tar products are shipped abroad in a crude state at a heavy expense, manipulated by foreign skill and labor at another heavy expense, and returned to us still as a crude product, but largely enhanced in value. The entire profits of manipulating our own crude material have thus for years been lost to our country."

It has been claimed at various times that it was impossible to successfully manufacture coal tar dyes in this country; but this is very fully covered by a statement made by Dr. Frederick Koehler before a subcommittee on the tariff of the Senate Committee on Finance on December 13, 1888: "I was employed as chemist in the largest aniline color factory in Germany and in the world from 1874 to 1883, and as such have had in my hands and am familiar with the manufacture of all aniline colors known up to that date. I subsequently was engaged for over five years in the aniline color manufactory in this country, and I, therefore, believe myself competent to judge about the possibility or impossibility of making colors here. This gentlemen having never been a manufacturer of coal tar dyes himself can only express the views of his friends in Germany about this matter or possibly the views they wish to impress upon your committee. If they really are convinced that aniline colors can never be profitably produced here, why are they not willing to let the American mnaufacturers die a natural death instead of trying to kill them quickly by having the duty removed, trying it even to the point of raising money among the German aniline color manufacturers for that purpose? I, for my part, am firmly convinced that aniline colors can and will be made here, and, as a matter of fact, about 20 percent of the home consumption is actually made here."

The manager of one of the great German establishments told Doctor Koehler he did not think the Americans crazy enough to lower duties on dyes—but they did, and the American consumer is now experiencing the results.

In none of the many congressional investigations of the coal tar dye manufacture has there been any indication of a fixed policy looking toward the future, nor any logical plan calculated to build up the industry, but only the supposed exigencies of the moment have been considered, and the effect on the amount of the revenues for the time being. Indeed, the result of American tariff regulations has been to strengthen the foreign manufacturers of dyes, and enable them to continue to earn dividends of 20 to 25 percent. Under these conditions it is difficult to see where the American textile manufacturer, for whose benefit our tariff has been supposedly arranged, has profited. In any case it is now being gradually recognized that America has, through gross neglect, failed to acquire a very valuable and necessary industry.

Drying and Size Fastness

THE following query and answer from *Papier Zeitung* may interest others: "I dry covers for documents, made from rags, on drying rolls and encounter the unpleasantness that the covers are not size-fast," says the correspondent. "On the other hand, the covers, with the same quantity of size, even with twenty percent less, are thoroughly size-fast, if dried in the air. The drying roll is heated only by exhaust steam, without pressure. Can you tell me the cause and a remedy? The same covers remain size-fast at a temperature of 40° to 50° in the Schilde dryer. Rosin-soap and alum are used for sizing."

In reply to this query our Berlin contemporary says: "The fact that the document covers when dried on rolls are not as size-fast as when air dried may be due to one of the following causes:

"The drying roll is, perhaps, at times so cold that the rosin in the paper is not sufficiently melted to fill the pores. If only a few of such inadequately dried covers find their way in with others, properly dried, there is a risk of the entire lot being condemned as insufficiently sized.

"If only one drying roll is used, the cause of the defective sizing may be sought in the fact that the covers are dried only on one side. Turning and a second passing through of the covers should then remove the defect. It is possible that newly employed workers have either for convenience sake, or through ignorance, departed from this important two-sided drying.

"Rosin-sized document covers that are properly dried on rolls turn out more size-fast than if dried in the air. That our querist has had the contrary experience, especially that the air-dried covers proved more size-fast with less rosin-size, may be a result of using very "wet" pulp for the covers, causing them to shrink more actively, thus closing the pores. The inquirer is therefore able with covers dried only on rollers, where wet pulp has been used, to greatly increase the size fastness.

Woodpulp as a Basis for Smokeless Powder

IN a letter to one of the London newspapers an English chemist discusses the use of sulphite cellulose as a substitute for cotton in the manufacture of smokeless powder. He says:

"There is not the least difficulty in making as good propelling powder from woodpulp as from cotton, and, as a matter of fact, excellent powder has been made from wood for more than thirty years in this country, and this powder easily passes the stringent tests insisted on by the Home Office, and is perfectly safe.

"Statements that cotton is necessary for the production of explosives have been made by several persons who apparently derive their knowledge from the very limited information that has been published in textbooks. I am not aware of any competent authority who has actually been engaged in the manufacture of explosives who would endorse such a statement. I have the authority of Count de Chardonnet, the inventor of artificial silk, a member of the French Committee on Explosives, and one of the highest authorities on nitrocellulose, for the statement that the cellulose derived from woodpulp yields a nitrocellulose which is even better and purer than anything that can be produced from cotton. This entirely agrees with my own experience.

More than thirty years ago, when working out the process by which all nitrocellulose powders now in use are made, I tried woodpulp as a raw material and obtained a product which was in every respect equal to the best guncotton made from cotton. The process of purification of the woodpulp for explosive purposes is not difficult, and is well known in Germany. Cotton waste has hitherto been used for making guncotton, not only because it is cheap, but also because it has already been partially purified in textile factories.

"The best woods for this manufacture are those free from rosin; but resinous woods can be purified without difficulty, and the Germans have an ample supply of both varieties. We shall be living in a fool's paradise if we imagine that cutting off the supply of cotton from Germany will in any way interfere with her supply of explosives. For textile purposes cotton is necessary for all civilized nations, and Germany would miss it in many directions if the supply were cut off, but whether declaring it contraband is advisable or not is a question upon which the Government has fuller information than the general public.

Improvements in Sand Traps

IN a communication to the *Papier Zeitung*, a correspondent complains that the sand trap of his paper machine is not long enough to be in every way satisfactory, whereas, on the other hand, "space conditions in my mill will not permit a sufficient extension of the sand trap. Has the state of the art produced any innovation by which the elimination of sand from the fluid pulp is possible by any other means, or do you know of any other method of accomplishing this?"

To this "a paper manufacturer" makes the following reply: "The separation of sand from the freely diluted paper mixture, such as flows on to the paper machine, is possible only by settlement in the manner practised up to this time. New technical processes for this work are not known to me. If in the plant of the querist, there is not room to make the sand trap long enough, it might be possible to arrange several sand traps over one another and in operating to bring them in either behind one another, or side by side."

Practical Suggestions

Cooking Cellulose With Exhaust Steam

INVESTIGATIONS of the possibilities of using exhaust steam for heating digesters have been carried out in Swedish mills for several years, according to the *Papirjournalen*. After a good deal of experimentation results of high economic value were reached in this line and the utilization of exhaust steam now plays an important part in the high efficiency that characterizes modern Scandinavian pulpmaking.

The idea is to generate steam at very high pressure, utilize most of the energy convertible into power by passing this steam through noncondensing steam engines or steam turbines and finally use the exhaust steam for heating digesters, driers, etc. By doing so it has proven possible to reduce the steam consumption practically to what is needed for cooking and drying; in other words to eliminate the item "fuel for power" from the cost-sheet.

According to different cooking processes the process may be carried out in different ways. With the "short cook" system the pressure steam is admitted direct into the digester, the high pressure steam from the boilers is reduced in the power generator to 60 and 90 lb. pressure and then sent to the digesters.

When cooking by coils (Mitscherlich's process) the pressure of the exhaust is kept slightly above that of the digester. In some cases it has been found more advantageous to use exhaust steam of very low pressure at the beginning of the cook, when very little pressure but large amounts of steam are wanted for the coils and finish the cook with a comparatively small amount of live steam admitted direct into the digester. This arrangement is specially adapted for old plants, where boilers are not built for the high pressure (180 to 250 lb) which is required when exhaust steam of 60 to 90 pounds is wanted.

The first cost of an installation for using exhaust steam would naturally increase the building costs of a pulp mill, but it has proved a good investment in plants of such size that continuous utilization of the exhaust can be effected.

Testing Mechanical Pulp for Strength

OWING to unsuitable mechanical pulp, we experienced heavy losses in our mill, to say nothing of the loss of old, good customers, says Director Paul Ebbinghaus, of Copenhagen, in the *Wochenblatt für Papierfabrikation,* for July 10, 1915. It was my task to make an improvement in this respect. The dry contents test was effected faultlessly by our Kirchner apparatus. The fibrous character was determined with the aid of the Schopper-Riegler apparatus and the microscope; but the determination of the toughness value of the mass from the ground logs could not be worked out. After painstaking effort I succeeded in testing the strength of mechanical pulp fibers in the paper sheets. Even for mills that make their own pulp and can consequently discriminate in the selection of suitable pulpwood, this final test is important. To the papermaker engaged in the production of commercial goods it is of the utmost significance. Appended are suggestions regarding a method of testing pulp that is as reliable as it is simple which—even easier in principle—can, of course, also be employed for the examination of chemical woodpulp.

1 From ten bales of woodpulp, samples were taken and these, with an addition of fiber material, disintegrated either with the aid of a small homemade beating engine or by shaking or twirling in a flask.

When the pulp is obtained in the form of paper, or if the pressed card can be split into paper thickness, after the weight per square meter is brought into accord, the test can be made without the addition of cellulose, a comparison being made with an available pulp, known to be good. This can be done in a few seconds with the aid of a Rehse paper-strength tester, an instrument which should be in the hands of every papermaker.

2 The tests are more reliable, however, when to about 80 percent of the pulp, 20 percent of cellulose is taken and both substances disintegrated as indicated and mixed.

3 The fiber paste is contained in a small dipping dish. With a little metal sieve, as large as the hand, a sheet of paper is dipped out.

4 Either the dipped stuff is freed from water in the usual manner, or is secured with a wet felt by pressing, and then

5 Either with a smoothing iron, in the air, or on a steam-pipe, etc., or between felt and drying roll, I dry it.

6 The simplest process of all is in the course of possible stopping periods to pour the sample mass on the wire cloth and transform it into paper. In addition by means of the tissue paper-carrying roll on the screen, a piece the size of the hand can be taken from the sheet of paper, the space thus left filled with the experimental mass and the inlaid piece taken out on the reel.

7 Care must be taken that the investigated patch attains the proper degree of weight.

An example will make things plain. If I have tested the strength value of a faultless grade of pulp, for instance at 60 grammes per square meter, as to breaking strain and stretch by means of Rehse, and found it correct in the samples of the pulp coming in, no change in form of a depreciation can have taken place. The toughness value having been ascertained by parallel tests, we can then confidently proceed to manufacture. The mass that has been found good will also produce good paper and allow of working without trouble. Of course, the added quantity of cellulose must always be of the same nature and in the same proportion, and in paper form free from badly pressed places.

Since these tests have been made in our laboratory for every consignment received, no complaints have been received regarding defective strength, whiteness and purity. Without undertaking these most important of all tests, with the aid of which variations in quality can be easily determined and satisfactorily adjusted, the entire manufacturing business is uncertain.

PAPER

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Commercial Preparedness

A GREAT DEAL has been said and written within recent months concerning the necessity for making military and naval preparation to defend the United States against the possible invasion of a foreign foe. The war in Europe has demonstrated that neither modern civilization nor human reason can be depended upon to keep us out of trouble. Law, written and unwritten, treaties expressed or implied, moral and political obligations have all been utterly disregarded and the world has been brought to understand that European ambition can be restrained only by force of arms.

Certainly there is every reason why we should make ready to protect our own country and our own interest, it matters not how much we may desire peace or with what abhorrence we may contemplate war and, among the majority of our most thoughtful people, there is little division of opinion as to the necessity for making preparation.

While giving proper consideration to this need of the hour we must not, however, overlook the importance of preparing ourselves against a possible commercial invasion that would be disastrous to American industry and to American progress. No one can more than guess what will happen when the war ends, just as no one can more than guess when it will end. On the one hand it is contended that the nations involved in this great struggle which have heretofore been our commercial and industrial competitors will have so exhausted their resources and wasted their strength, that we need not have any fear of any successful rivalry on their part for generations to come, provided we ourselves keep out of the fight.

It is perfectly true that even if the war should terminate at once, such have been the ravages already accomplished as to leave Europe enfeebled; but it must not be forgotten that even in European poverty lurks an element of danger to the commerce of this country. The European nations and European people will need money—will need it badly and need it quickly, and will by their dire necessity be compelled to dispose of their products with little regard to the prices obtained. They will want our American dollars, and in order to get them will probably be offering European wares at bargain prices. They will be willing to work for a nominal wage, so that their cost of production will make it impossible for the American manufacturer to successfully compete with them.

If we want to keep our mills running and our people employed it will be necessary to guard against this inrushing current of European goods, and it will not be possible to make the necessary preparation for defense in a single day. Wisdom suggests that we should even now be looking forward to the coming conflict and begin at once to strengthen our industrial forts and accumulate our industrial munitions.

Looking at the subject from a political standpoint, there is not much ground for the belief that a general revision of the tariff can be accomplished for some time to come. The party which enacted the existing tariff remains in power; not only with the President in the White House, but likewise with the majority in one branch of the Federal Congress. It is not likely that it will reverse itself on tariff legislation; particularly since it is the contention of the party, and not wholly without reason, that the beginning of the European war so shortly after the Underwood law became effective, has prevented a complete and fair try-out of the new policy.

Even if the Republican party should at the next election succeed in putting an avowed Protectionist in the White House, and should at the same time elect a majority of the members of the House, it is generally admitted that there is practically no possibility of changing the political complexion of the Senate within four years. The chance therefore of tariff revision in the near future is far from promising.

In addition to this, such is the utter demoralization of trade relations, such the unprecedented upheaval of commercial conditions, that no one is in a position to know just what safeguard we will need when the war ends. There is nothing in the history of our entire past that gives us anything like a correct line on future requirements. Even if all parties were agreed that there should be an immediate tariff revision, could anybody undertake to say just what we ought to have? The theories and policies of the old political parties have had their foundations utterly destroyed by the new conditions thrust upon us. The man who goes before the public in the next political campaign talking along the same old lines that we have been accustomed to hear for generations will be a back number.

We must all recognize the dawn of a new era and the necessity for revising our political creeds to meet the present and future necessity. No party deserves to live which does not adjust itself to the changing needs of the people, and certainly the new commercial relations into which we shall be brought with our foreign competitors at the close of the war have not yet been determined.

This unusual situation seems to require a more flexible foreign trade policy than we have had in the past—one which will more readily adjust itself to the fluctuating conditions of trade. We shall hereafter need a tariff law that is made and maintained for the benefit of the country, rather than one kept as a political hobby to be perennially ridden by political office-seekers.

The tariff should be taken out of politics and kept out, and there has never been a better time or better excuse for making the change than right now. If the leaders of the great political parties of this country are moved by patriotic impulse, as they all claim to be, they should join in a sincere effort to devise the best possible tariff regulation which can be conceived for all the people, and maintain it for the good of the country and not as a partisan expedient.

It is our opinion that the business men of the country, without regard to their party affiliations, should join at once in a campaign urging the creation of a nonpartisan tariff commission, to be continued as a permanent investigating and advisory board. We have had it demonstrated time and again that our present method of making tariff laws is unsatisfactory and unfair. Let us therefore have something different.

The powers of such a commission, however, must not be understood. No tariff commission could revise our law or by its own authority fix any rate of duty without a constitutional amendment. The right to levy a tax of any kind, direct or indirect, rests solely with the Federal Congress. It is a power which Congress cannot delegate to any other body. But a commission can be appointed of men who are familiar with the country's needs, and whose business it would be to constantly study the changing conditions, and based upon their information and advice, Congress could very readily put into law the things which the commission might find desirable.

It would no longer be necessary to make a complete tariff law during one session of Congress, but any particular industry would have the right to have its trade relations investigated carefully by the commission and a report of its necessities made to Congress, so that where any particular hardship was apparent, the victims would not have to wait possibly a decade for a change of administration to find relief.

After all, political parties are maintained more to advance the ambition of political leaders than for any other purpose, and experience has taught us that we can not absolutely depend upon the promises of any of them. Their platforms, like the platform of the railroad coach, are made to get in on and not to ride on. If we are interested in the welfare of our country and the general good of all its people, we should broadly view this question as American citizens and not through the colored glasses of politicians.

We are all familiar with the manner in which tariff bills are made by Congress. The Ways and Means Committee of the lower house and the Finance Committee of the Senate have the matter in charge before it comes to a final passage. These bodies are made up of men who obtain their position usually on account of political service rather than on account of any experience they may have had or any special fitness for the work in hand.

The Ways and Means Committee drafts a bill which it believes will suit the purposes of the party in power. Hearings are then had at which the time is largely given to those who are interested in the passage of the proposed measure. When one opposes any of its features he is at once treated as a hostile witness and subjected to vigorous crossexamination.

It too often happens that a majority of the members of the Ways and Means Committee, and the same is true of the Finance Committee, are not only totally unfamiliar with industrial conditions abroad, but do not even know what the situation is in our own country. It seldom happens, indeed, that a hearing has any material result in finally shaping the bill. Whatever may be said for or against it is forgotten, and the decree of the party calling for its passage is rigidly enforced by making it a party measure and cracking the party whip.

The creation of a tariff commission, which would devote its entire time to this matter, would enable it to make a fair and unbiased investigation, not only calling in such witnesses as might be able to impart valuable information, but it could when it so desired visit manufacturing centers and examine manufacturing plants and study for itself the operating conditions which affect the cost of production.

It is perfectly true that the work of the commission would be valuable or otherwise according to its personnel. Good work can be expected only from efficient and honest men. These are obtainable, but not always obtained. The same, however, is true of every other tribunal in the country. The Interstate Commerce Commission, the Trade Commission and the Supreme Court itself rests its reputation and its power for good or for evil entirely with the men who compose it.

There has been entirely too much of a disposition to rule this country by commissions, and very many have been created that were utterly useless and some that were worse than useless. But the overdoing of an improper thing does not justify the failure to do that which is proper. We believe in the tariff commission and believe it to be to the interest of all our people to insist upon its creation and maintenance.

The Situation in Dyestuffs From a New Angle

What a Large Consumer of Dyestuffs Has to Say Regarding German Competition

[SPECIAL TO PAPER]

WILMINGTON, Del., Sept. 14—Although pertinent to the textile industry rather than to papermaking, the following discussion of the situation in dyestuffs, from an article in the *Every Evening,* of this city, will be read with interest by all users of artificial colors. There is, of course, no such thing as a special paper stock dye, though all dyestuffs used in the coloring of textiles are not applicable for use in the paper industry. The text of the article follows:

It is reported in various quarters that the relaxation of the British blockade on German goods destined to neutral countries may raise the embargo on dyestuffs. In answer to a question as to the raising of the embargo, a large consumer of dyestuffs who is in close touch with the situation made the following statement today:

"The dyestuff question has had a considerable space devoted to it by newspapers, it has been investigated by the Senate in a half-hearted way, and the technical journals have printed many columns and yet the true inwardness of the situation is not generally known or understood. Germany does not wish us to have dyestuffs at this time, and it is not her present intention to give us any. She, alone, is responsible for the present situation. She knows accurately that the existing American dyestuff manufacturers cannot supply our requirements; that to build up a big dyestuff industry will take millions of dollars and fine organization, and that to make a success the American industry would have to compete with Germany throughout the world. The German manufacturers of dyestuffs, so far as exports are concerned, are a unit. They have almost a monopoly of the business throughout the world and they propose to keep it, and you cannot help but admire their cleverness displayed in holding on to it. Let us go back to August 1 of last year and we find the German aniline colors sold everywhere in China, Africa, South America, North America, Europe and Asia.

"At this time we were producing possibly 20 percent of our consumption. For the most part, the raw or partly finished materials entering into this production were purchased abroad of the Germans. The notable exception to this was and is the Benzol Products Company at Frankford, Philadelphia, a corporation affiliated with the General Chemical Company. This concern manufactures from American raw materials aniline oil and aniline salts, two dyestuffs much used for dyeing all kinds of cotton goods black. The oil also has other technical uses not connected with dyeing. Their new plant at Marcus Hook, Pa., just starting in operation, is designed to take care of the consumption of the country, and with some long-term contracts at good prices, it has a very fair chance to stand the stiffest kind of German competition for several years to come.

"As soon as war was declared there was a mad scramble to get dyestuffs, and the German houses sold their stocks as fast as they could be handled. More goods were brought over last fall, but there were no raw or partly finished materials (intermediates, as they are sometimes called) in the shipments. This was a shrewd move as it prevented the rapid expansion of the industry here and compelled the few dyestuff manufacturers of the country to turn a very considerable part of their equipment to the manufacture of these partly finished materials. This additional manufacture was and is still a great hindrance to an increased output of finished dyestuffs. The manufacture of dyestuffs is not necessarily all a matter of patents or secrets, but the processes are often very complicated and require the greatest nicety in handling. This move also hampered the explosives manufacturers as they require intermediate dyestuff products in their business. Then, too, the total amount of dyes brought over, per month, was supposed to represent three-quarters of the normal consumption for that period. This tended to make the consumer careful and saving. It gave, too, the idea that although Germany was waging a tremendous war, she still found time to make dyestuffs for America, whereas it is more than probable that what dyestuffs we received between August 1, 1914, and March 24, 1915 the date of arrival of the last German consignment, were, for the most part, stock accumulations and goods that normally would have gone to England, France and Russia.

"The so called British blockade effective March 1, 1915, gave the Germans still another opportunity to strengthen their position on dyestuffs and turn it into a political question as well as an economic one. On all sides it was said that dyestuffs could not be sent to America any longer owing to the British blockade. However, according to newspaper reports, the British Government has announced in London and also through the English Ambassador in Washington, that the English would not object to dyestuff shipments being sent to America or the exchange of cotton for the dyestuffs, and indeed some progress was made at one time toward arranging cargoes for two ships.

"The New York *World* in its recent series of articles on the activities of German agents in the country, quotes in full a report from Herr Waetzoldt, a German trade expert, to Chancellor von Bethmann-Hollweg. The trade expert, under date of June 30, reports on meetings of protest and the sending to President Wilson of petitions, and says:

" 'The principal and most tangible pressure on the administration in Washington will only begin to be felt when the cotton question again becomes acute. There is a particularly good crop in prospect, and if the exportation of cotton is interrupted and the price of cotton thereby influenced injuriously, the cotton States, viz., the Democratic South, will bring all possible pressure to bear on the Democratic administration to have the order in council revoked.

" 'From a German standpoint the pressure on the American Government can be strengthened by the interruption of deliveries from Germany even if the British Government should permit exceptions. These shipments especially should be interrupted, which the American industries so badly require, especially chemicals and dyestuffs, as also goods which are used in the realm of the fine arts.

" 'The withholding of goods is the surest means of occasioning the placing before the Administration in Washington of American interests. Those protests have the most weight which come from the American industries which employ many workers. The complaint of one of the great American industries which declared that the continued withholding of dyestuffs would make necessary the dismissal of 4,000 workmen has done more than the protests of the importers.' "

What are dyestuff users doing in the meantime? Well, they are using carefully the few dyes that they have and without going into long explanations, it is safe to say that the shortage has been a blessing in disguise. The dyer has learned to use such colors as he could obtain in a much more intelligent manner and has found out that he can do without a number of things. There have been far too many dyestuffs offered in the market, and many of them of little merit, technically considered. The average dyestuff consumer makes little scientific study of his needs and if he obtains a dye or dyes that apparently fit his particular purpose, he is satisfied, and although better dyes may be offered, he will not change because of the difficulty of changing his dyeing formula.

Then, too, the dyestuff users are going back to the old coloring matters used before the days of aniline dyestuffs, the vegetable and dyewood extracts. In fact, these have never been superseded and for some purposes, such as the dyeing of silk, black, the dyeing of leather, and the dyeing of woolen material, are still greatly used. The best known and most used of these extracts are logwood, the product of a large, rapid growing tree, found in great quantities in the West Indies and Central America; cutch, the product of a tree of the species of Mimosa, found in India and Southern Asia; fustic, the product of a tree found in the West Indies, tropical America and India; quercitron, the inner bark of certain oak

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The Technical Section of the American Paper and Pulp Association, in order to stimulate ideas that will result in improved methods of manufacture, and to focus attention on the four important problems that confront pulp and paper makers, offers a prize of $100 for the best paper submitted on each of the following subjects:

(1) The various causes for the deterioration of the Fourdrinier wires and steps to be taken in the prolongation of the life of the wires.

(2) How can the pitch in sulphite pulp be eliminated?

(3) The effect of the order and time of adding alum, rosin and color on the retention of color.

(4) The retention of the various mineral fillers used in papermaking and their effect on the life of the machine clothing and the quality of the paper.

Rules Governing the Contest:

(1) The authors of the papers presented must be residents of the United States or of Canada.

(2) The papers are to reach the office of the secretary of the section on or before December 31, 1916.

(3) Each paper must be typewritten and must not bear the author's name or address. Instead of the author's name the paper shall bear a number or other designating character or word. Accompanying the paper shall be a sealed envelope containing the author's name and address and the number or designating character by which the paper is characterized.

(4) Papers presented in this competition must not previously have appeared in print.

(5) The determination of the papers winning the prizes shall be made by a committee of three appointed by the chairman of the Technical Section. This committee shall publicly report its findings to the section at the time of the annual meeting next after February 1, 1917.

(6) All papers received shall be returned to their authors soon after the announcement of the winning paper.

(7) The articles winning the prizes offered shall be published in the report of the organization and also in PAPER, the official journal of the Section.

Address all communications to

TECHNICAL SECTION, AMERICAN PAPER AND PULP ASSOCIATION

THOMAS J. KEENAN, Secretary

117 East 24th Street **New York City**

trees found in the United States and Central America. These, dyed with mordants, salts of tin, iron, etc., give quite a range of shades, but no very bright ones. They are difficult to handle in the dyeing of cotton goods and are much more easily applied to woolens and leather. Some are very fast to light and washing and in these respects are superior to many aniline colors; the supply so far has kept pace with the demand.

There does not, therefore, appear to be any good reason for the statement that many men will be thrown out of employment unless aniline dyestuffs are received from Germany promptly. There will soon be an ample supply of American black dyeing materials, there are and have been for years, some American aniline colors, and there does not appear to be any shortage of dyewood extracts. The dyeing of some very bright and fancy shades will soon be stopped, unless imported colors are received. Overall material will probably be dyed khaki shades, instead of the familiar blue, colored papers will be few, shirt stripes will not stand much laundering, ink will be not quite as good, etc., etc.

So, in conclusion, the outlook is not quite as bad as it has been painted. If by any chance the Standard Oil Company or Du Ponts, or some other huge corporation, should investigate the dyestuff situation and consider entering the field, it is safe to say that we would soon have imported dyestuffs. The German programme is apparently well thought out, and unless the pressure becomes unduly great, they will doubtless continue their present embargo. Once the war is over, there will be ample German dyestuffs at prices which will doubtless prevent any ordinary competition.

Northern New York Paper Mill Strikers Argue Their Case

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 14—Last Friday night the public hearing, which was opened here Wednesday afternoon by the New York State Industrial Commission for the purpose of investigating the renewal of the strike in the mills of the Donnacona, St. Regis, Remington, West End, Continental and Champion paper companies, was brought to a close after many witnesses had been sworn on both sides.

The hearing was largely attended throughout by manufacturers, and strikers were present with their leaders. At the conclusion Chairman John Mitchell said that a mass of evidence had been taken which would all have to be carefully reviewed before a decision was reached. The findings of the commission will, however, be communicated to the representatives of both sides as soon as they are reached.

The full board of members of the commission sat at the hearing. Chairman Mitchell presided, and Commissioners Louis Wiard, W. H. H. Rogers, Charles Lyons, James M. Lynch and Deputy Commissioner William C. Rogers listened to the testimony. Edward A. Gifford was sent here by the Attorney-General's office to represent the commission. Attorney J. Edward Singleton, of Glens Falls, and T. Arthur Hendricks, of this city, appeared for the men, and Senator Elon R. Brown and former State Highway Commissioner John N. Carlisle represented the manufacturers.

President J. T. Carey, Vice-president George J. Schneider and Organizer Joseph and Mrs. Tylkoff of the International Brotherhood of Paper Makers, and President J. H. Malin, of the Pulp, Sulphite and Paper Mill Workers, were here to represent the men.

Because of the fact that the strikers contended that the cause of the last strike was due to failure on the part of the manufacturers to live up to the agreement settling the first strike, Chairman Mitchell, before any testimony was taken, stated that the investigation would be confined to the agreement of August 16 so far as possible.

Attorney Singleton opened the case for the strikers, charging that the companies had maintained a black list; that they had discriminated against the men; that New York thugs had been hired to take the place of the strikers at double the pay received by the strikers; that company men had fired the shots of which the strikers were accused and that the companies paid no more wages for a thirteen-hour day than the International Paper Company paid its men for an eight-hour day.

Senator Brown in opening for the manufacturers retorted to the last remark that the International Paper Company had paid no dividends in some time and that its common stock was quoted at nine and its preferred stock at thirty-nine as a result. He stated that the strikers had shot into the homes of men in Deferiet and turned the village into a hell by their brutishness. He declared that the manufacturers had agreed to the agreement suggested by the commission and had lived up to it in every respect, but that the strikers had not.

Several of the strikers were then placed on the witness stand and they testified that black lists had been kept by the manufacturers and to having been refused positions. Testimony was given that the mills had failed to return to the three-tour system as they had agreed, and other evidence was introduced to show that a number of permits to carry revolvers had been issued to strikebreakers.

Senator Brown and the manufacturers took exception to the testimony concerning black lists, but admitted that each mill kept a list for its own uses only of men who would not be taken back under any circumstances. There were only a few of these in each case.

The industrial commission's memorandum of the agreement settling the first strike was read into the evidence and for the first time became public property. No exception to it was taken by either side. This stated that in changing from the two-tour to the three-tour system there would doubtless be need of all of the strikers of the first instance either in their original positions or in other mills in the same locality. The managers promised to find places for all of their old men if possible in their own mills, and if not possible to aid them in getting jobs in other mills.

It was agreed that there should be no discrimination and no black list kept, but it was understood that there were a few men that would not be taken back. All mills were to resume their former working tours as fast as possible, and wherever there were three tours before the strike, it was understood that there should again be three tours.

The agreement stated that the managers would not recognize the union in any way "at present" but would not object to the men retaining their union membership. It was further agreed that the managers should hear grievances from individuals or committees as had been the custom in the past.

At the same time it was understood that the competent nonunion men that had been taken on during the first strike should be protected by the companies and on the other hand the strikers understood that they should take no steps to stampede these men and cause a further shutting down of the mills.

There was a provision which stated that while the management of the Champion Paper Company's mill had said that none of the strikers would be taken back these men could better their condition by calling on the management and talking over the situation to the end that if he did not alter his mind he would effect an exchange with other mills so that all of his men would be provided for.

The concluding paragraph said: "If the men accept the settlement in good spirit the managers will exert themselves to satisfy their expectations by more than fair, generous treatment."

President G. H. P. Gould, of the St. Regis and Donnacona companies, denied a black list and said that he only went into the agreement after being urged by Commissioner Wiard. He said that he had been fooled and that in the future his mill would be operated as a strictly nonunion mill.

Commissioner Rogers told of the investigation made by him and Commissioner Wiard, which resulted in the agreement. He corroborated the memorandum introduced earlier in the hearing.

BLACK RIVER.

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THE WEEK'S LATEST TRADE NEWS

Rioting Suppressed at Deferiet

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 14—Ten days have elapsed since the strike was renewed at the mills of the St. Regis, Remington, Donnacona, West End, Champion and Continental paper companies, yet during that entire time the conditions have been quiet, there having been no disturbances since the first night, when the strikers at the Deferiet plant of the St. Regis paper company, where a large number of foreigners were employed, smashed the village lights, stoned houses, fired several shots and assaulted some of the nonunion men.

During the past week thirty-three of the men suspected of rioting have been placed under arrest on the charge of having violated the penal laws of the State, and have been arraigned in the police court in this city. In the case of the Americans bail was fixed at $750 each, while in the case of the foreigners it was $500. In each case it was furnished and the men were released from the custody of the sheriff. Tuesday they will have their preliminary examination, when it will be determined whether or not they will be held to await the action of the grand jury. Should they be indicted and convicted after trial they may be fined $500 or sentenced to terms of two years in prison or both.

During this strike Company C of the National Guard and the Naval Reserves, stationed in this city, have been at the Deferiet plant guarding the property of the paper company. The entire village as well as the site of the mill is owned by the company, which has jurisdiction over more than 500 acres. None of the streets have been deeded to the town, and the village has not been in existence twenty years, so that they have not been used long enough to make them public property.

For this reason the company can make its own rules to keep the men out and has done so, establishing a dead line and moving the post office outside the village, so that there has been no necessity for the strikers to come into the village for anything. These restrictions together with the guarding of the mill have made it almost impossible for the strikers to unite and cause a demonstration. The authorities say that such a thing is now impossible and that there is nothing further to fear from them.

Sheriff Charles C. Hosmer has charge of protecting the property, and has been assembling a large force of deputy sheriffs there. When this is sufficient all of the troops will be released. The Naval Reserves were released Saturday and returned home, and it is expected that Company C will be released early this week.

In the meantime the company has been getting in men and organizing its force of workers upon the plan of having a strictly nonunion mill, recognizing the labor leaders in no way and having nothing to do with them. The machines were started up during the past week and paper is now being made and shipped.

All of the mills having incomplete forces are taking on men and their mills will be nonunion. BLACK RIVER.

Russell Falls Paper Company Suspends

[SPECIAL TO PAPER]

RUSSELL, Mass., Sept. 14—An involuntary petition in bankruptcy has been filed at Boston against the Russell Falls Paper Company. A statement of the assets and liabilities of the company has not yet been given out and a statement as to who the chief creditors are was refused by the company officials. The mill is shut down waiting some adjustment with the creditors and between sixty and seventy-five employees are out of work. No definite plan of reorganization has yet been given out. It is expected that the mill will continue operations as there are several orders on the books remaining to be filled.

Newsprint Is In Good Demand

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 14—Newsprint seems to be leading the way toward better things in the paper market. There has been a marked improvement in its consumption of late. Stocks are being well worked off, and it looks as though production would be on a normal basis in two or three weeks more. This is of course a seasonable thing, as times of greater advertising requirement approach. Nevertheless indications are plain that all grades of paper are in line for decided improvement.

The feeling in the market is unmistakably optimistic, due to the more general employment of labor, the diminishing number of idle cars, and other factors by which the general business situation is gauged. Manufacturers of other grades of paper besides print, in this district, report quite generally that new business is coming to them much more freely. Some of their mills are booked for thirty days ahead. They are not looking for any immediate boom, but they are confident that the worst is over, and that business from now on will improve in a slow but sure way.

Drought Broken in Wisconsin

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 14—Last week was signalized in this locality by a breaking of the drought that commenced early in July and has been responsible for bringing waterpower down to about its lowest terms. Several tremendous downpours of rain occurred. The precipitation was not of the slow, soaking character that does the most good, but it was welcome nevertheless.

The level of Lake Winnebago is up today an inch and a half from the previous low point, which is not much but shows an improving tendency. As previously the level was below the crest of the Menasha dam, it will have to rise considerably more before any increase of water-drawing for power is permitted. At about the middle of last week reports were received here of forest fires raging along the Canadian and United States' sides of the Rainy river been Spooner, Minnesota, and Ft. Frances, Ontario, large quantities of timber cut for lumber and pulpwood being destroyed. Whether these fires are now extinguished is not known here.

News Notes from Holyoke

[SPECIAL TO PAPER]

HOLYOKE, Mass., Sept. 14—A slight advance is noted in the price of the American Writing Paper Company 5 percent gold bonds, the quotations showing an appreciation of a point or two during the past week. It is unofficially stated that the last of the big log drives for the mill at Mt. Tom Junction is coming down this year. If this is so, two mills will be affected, the Mt. Tom sawmill and the Mt. Tom pulpmill. While the pulpmill may occupy its present location, it is stated that in the event of the change the sawmill will be located nearer the head of the drive. Both mills are owned by the Connecticut Valley Lumber Company, which has a large number of lumber tracts in the north which have not yet been touched. Each year the work in getting the logs down the Connecticut river to the Mt. Tom mills grows more difficult, it is said. There is enough material on hand to keep both the pulpmill and the sawmill running for another year and no change will be made before that time. It is then expected from what has been learned that the sawmill will be moved to Vermont or New Hampshire, although the pulpwood may be sent to Mt. Tom by rail.

President Arthur C. Hastings, of the American Writing Paper Company, will leave the coming week for a month's

"TEST SPECIAL"

Rubber Belting

BEST BELT EVER MADE

NEW YORK BELTING & PACKING COMPANY

New York, N. Y. - - 91-93 Chambers Street
Chicago, Ill. - - 124-126 West Lake Street
Philadelphia, Pa. - - 821-823 Arch Street
Pittsburgh, Pa. - - - 420 First Avenue
St. Louis, Mo. - 218-220 Chestnut Street
San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

western trip. He will visit the papermaking centers in the middle west before proceeding to the Coast.

Local owners of the preferred stock of the International Steam Pump Company, of which the Deane Steam Pump Company is the local division, are opposed to the plan of reorganization proposed and have joined with others against the plan. An injunction was granted last week against foreclosure, which is considered a victory for the protestants. About 4,300 shares of this stock are held in Holyoke.

New Power and Light Enterprises in Ohio

[SPECIAL TO PAPER]

DAYTON, O., Sept. 14—Paper manufacturers of the Miami valley are intensely interested just at this time in an enterprise recently projected and which has for its purpose the furnishing of power and light for all the big plants in the valley. It is being financed in New York City, and the venture now gives promise of meeting with unqualified success. It is being constructed at Woodsdale, just a short distance below Hamilton. The big dam, which will be a contributing factor, and all the surrounding territory belongs to the Chatfield & Wood Paper Company, at Cincinnati, which is also financially interested in the movement.

The lease for the dam and grounds will cost $5,000 a year, and the leasehold extends ninety-nine years. It will be seen, therefore, that this feature alone will involve the expenditure of approximately half a million dollars. It is asserted that the company will be able to produce power and light at a surprisingly low figure. Arrangements have already been effected with a number of paper companies and other big enterprises in the valley for the furnishing of power and many others are contemplating the same action.

The dam located at this place is said to be the best anywhere along the course of the river. It will be raised about four feet, however, which will assure an extraordinary head of waterpower and affect the water depth several miles up the river. Careful surveys by competent engineers have demonstrated that this can be done without inundating the land on either side. It is also demonstrated that the water of the river is sufficient to give the company an ample head of water the year around to subserve all purposes.

Some years ago this same scheme was contemplated and it was thought for a time that it would be fully worked out. Certain obstacles arose, however, and the promoters abandoned the project. The enterprise is now attended with much more favorable conditions, and it is probable that a big company will be formed with plenty of capital to make Woodsdale a great power center for southern Ohio and Indiana.

The course of the new company is being watched with keen interest, and the influence of the giant undertaking is expected to be exerted on practically all the manufacturing concerns throughout the valley.

STRAWPAPER MANUFACTURERS FIGHT FREIGHT ADVANCES

Strawpaper manufacturers are still fighting with vehemence the proposed advance of freight rates or straw throughout the territory embraced within the Central Traffic Association. There is a pronounced view that the railways are endeavoring to take undue advantage of the manufacturers. This has been a matter of more than passing concern to the manufacturers of strawpaper for many years and the situation is gradually growing more acute. They believe that the proposed increase in rates is unreasonable and exorbitant and they will use every means to prevent it from becoming effective. "A goodly portion of the time we have a scarcity of straw," said E. B. Weston, one of the leading straw manufacturers in the country. "When this occurs, we are subjected to the necessity of long-distance shipments, which is costly and prevents the manufacturers from making even a legitimate margin of profit. Now that the prospects indicate a greater abundance of straw, we are confronted with the demand for higher freight rates.

WILL OF THE LATE SAMUEL J. MURRAY

By the terms of the will of the late Samuel J. Murray, late vice-president of the United States Playing Card Company, of Cincinnati, and director and stockholder in the W. B. Oglesby Paper Company, of Middletown, O., filed for probate this week, his sisters, Elizabeth and Catherine Murray, are each to receive $5,000, and Mrs. Daniel Reilly $1,000. The furniture and household goods are bequeathed to his widow, Mrs. Anna E. Murray. The rest of the estate is to be held in trust by his widow and son, William J. Murray, for five years, and the income to be paid to his widow. The estate at the expiration of that period is to revert outright to the widow and at her death to be divided equally among the four children. The estate is estimated to be worth $100,000.

VALUABLE RING FOUND AMONG RAGS

E. Staton, who is employed at the plant of the W. B. Oglesby Paper Company, in Middletown, found a valuable diamond ring while at work in the rag room a few days ago. The ring contained three large diamonds and three emeralds, each stone being of the size usually found in the solitaire ring. Engraved on the inside of the band are the words: "From Nick to Alice." While it was at once concluded to whom the ring belonged, it has been advertised extensively and no request for it has yet been made. The lucky discovery excited considerable interest among the employees of the mill and other residents of Middletown, and an eager search was made throughout the remainder of the waste about the mill but none was equally fortunate as Mr. Staton.

HOWARD PAPER COMPANY DECLARES A DIVIDEND

Despite the industrial depression concerning which manufacturers throughout the country talk so much, the stockholders of the Howard Paper Company, at Urbana, were gratified this week with the announcement by the directors that the annual 7 percent dividend would be paid on September 10. This company is one of the leading industries of Urbana and one of the prominent paper manufacturing concerns throughout the State. That it is able to pay the usual dividend in the face of obstacles with which all manufacturers have had to contend the last year is regarded as remarkable. It is taken as an unmistakable evidence of the stability of the company. "We have had hard pulling," said President Maxwell Howard, "but we have managed to get by in splendid style. I believe the worst is now over and that we are on the high road to prosperity. Unless all signs are wofully misleading, we are entering upon one of the greatest periods of prosperity the country has ever known."

ASSESSMENT OF CHAMPION PROPERTY STANDS

The Butler county board of complaints has completed its work and has refused to grant any decrease in the appraisement of the property of the Champion Coated Paper Company. It sustained the valuation placed upon it by the district assessors, which was $1,787,340. The company, through its attorney, it will be recalled, asked for a reduction of $510,140. Nearly a half hundred cases of small individual property owners were heard by the board, but the Champion case was the only one of importance. An appeal to the State Tax Commission by the Champion Company is now anticipated.

BOWLING WILL BE RESUMED

The industrial bowling league has been organized and the season of 1915-1916 already inaugurated. Among the paper manufacturing concerns identified with this organization are the Champion Coated Paper Company, of Hamilton; The Black-Clawson Company, of Hamilton; The Gardner-Harvey Paper Company, the Colin Gardner Paper Company and the P. A. Sorg Paper Company, Middletown; The Miami Paper Company, at West Carrollton; the Aetna Paper Company, and the Peerless Paper Company, of Dayton; and the Howard Paper Company, of Urbana, Ohio. Several games have been played and the teams representing the paper manufacturing concerns have held their own remarkably well.

NOTES OF INTEREST

Charles Seybold, president of the Seybold Machine Company, of this city, engaged in the manufacture of papermaking machinery, and his wife left several days ago on a motor tour through the West. En route to the West they will stop

Why Try to Outbid the War God?

The tremendous and unprecedented foreign demand for leather for military purposes is naturally forcing prices higher and higher.

Why should you, the user of belting, pay this "war tax" on leather when you can buy rubber belting from us at "peace prices"?

Thirty years' investigation of belting requirements in every power line qualifies us to recommend the right belt for every purpose.

RUBBER BELTING

Quaker City—Crown—Hercules

These three brands solve the belting problems for practically all classes of power transmission duty, conveyor purposes, elevator work, etc.

In quality, workmanship and performance, these belts are the ultimate values in their grades.

You owe it to yourself to investigate.

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211 Wood Street

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207 Fulton Street

over in western Nebraska to visit a number of the friends of Mrs. Seybold. Before returning they expect to cover more than three thousand miles.

The Gardner-Harvey Paper Company's baseball team defeated the K. of C. A. C. team of Middletown Sunday by a score of 10 to 7. The game was vigorously contested and was not won until the last ball had passed the plate. The Gardner-Maroons are regarded as among the fastest amateur teams in the Miami valley, winning nearly all the contests in which they engaged during the summer.

Work on the construction of an addition to its plant to cost approximately $35,000 was begun last week by the Platt Iron Works Company, of this city. This company has recently received a number of large orders requiring greater capacity than that under which it had been formerly operating. The work will be carried to speedy completion and it is expected that the enlarged plant will be in operation not later than December 1.

Papermaking to Be Taught With Journalism

[SPECIAL TO PAPER]

BANGOR, Me., Sept. 14—It is very probable that the University of Maine at Orono will soon add the printing of a considerable newspaper to its school of journalism and papermaking courses. A step in this direction has been taken by the purchase of a large job printing plant in Bangor which has been moved to Orono.

Some time ago the university established its pulp and paper making courses and there has been produced a newspaper which was printed on news stock turned out at the papermaking plant. But printing facilities have been lacking until the job printing plant was purchased.

The university has a course in journalism and soon will be producing a real newspaper, every part of which will have been handled by the students in their various courses

John C. Mollette, who was instructor in the school of journalism last year is now in New York, having accepted a postion as sporting editor of the New York *Mail*. His place at the university will be filled by B. A. McAnney, who is a graduate of the Pulitzer School of Journalism.

LUMBER CUT WILL BE LESS THAN NORMAL

The low lumber market and the small demand will have its effect upon the lumber cut in Maine and adjacent waters this season. A prominent Bangor lumberman who is interested in the business on the St. John waters expresses the opinion that the cut will be fully 40 percent below the normal, which would be considerably below the cut of last year which fell off about one-fourth from the normal cut.

"The operators on the St. John should be getting under way," stated this gentleman, "but thus far I know of none who has commenced operations. It may be that they are waiting for the millmen to indicate what they will need, but at this time in other years the camps have usually been started. I cannot see where there will be more than 60 percent of the normal cut this season if the operators cut the way they are planning and talking now. There is little or no demand for lumber, and the operators are piling up manufactured lumber in the mill yards, the shipments being unusually light." Several millions of logs which have been held at Seven Islands and above in the St. John river were still there at last accounts, and it is expected that they will remain there until the fall freshets come, when it is believed they can be moved down the river.

PRECAUTIONS AGAINST FOREST FIRES

Maine has been very free from forest fires this season, but the wardens are giving out orders for especial care now as in spite of the fact that most portions of Maine have been deluged with rain during the summer months there has been practically no rainfall in the woods and they are very dry in consequence.

For use in their paper mills the Berlin Mills Company, of Berlin, N. H., have recently placed an order with the Westinghouse Electric & Manufacturing Company for twenty alternating current motors, aggregating 365 horsepower.

Welding Defective Cores in Paper Mill

The St. Croix Paper Company, of Woodland, Me., formerly threw all broken and defective paper cores on the scrap pile. Much of this material was sold as junk at the best prevailing market prices. Many carloads of broken and defective cores had been disposed of in this manner before it was discovered that all of them could have been made as good as new by employing oxy-acetylene welding.

By using the Prest-O-Lite process of oxy-acetylene welding, broken cores are now repaired in nine minutes. No filling material is used as a method has been found for handling the welding operation so that sufficient strength can be obtained with the material flowed into the weld from the pipe itself. Occasionally, however, a small quantity of filler rod has to be added to insure a joint that will be as strong as the rest of the core itself.

The two sections of pipe are prepared by simply cutting off in a machine with the regular cutting-off tool. The ends of the pipe are not beveled as the extra metal is needed where filling rod is not added.

The cores are steel tubes, three inches in diameter and average about fifty inches in length. During the welding operation, they are slipped over an iron arbor of the same diameter as the shaft on the roll is designed to run, to insure perfect alignment with the longitudinal center.

As these cores accumulate very rapidly in the enormous production of the St. Croix Paper Company, it is stated that enough material, heretofore scrapped, is now on hand to furnish several year's supply of new cores without making it necessary to draw on any new material at all.

Tests of welded paper cores indicate that the reclamation process does not affect the original strength in the least—the welded portions stand the punishment incident to rough handling during continual shipping, although frequently the *original* metal in the tube is broken.

Daily "Commerce Reports"

E. E. Pratt, chief of the Bureau of Foreign and Domestic Commerce, Washingtn, D. C., is sending out to a large number of American business firms a letter relating to the daily publication called *Commerce Reports*. The letter is addressed to sales managers and reads as follows:

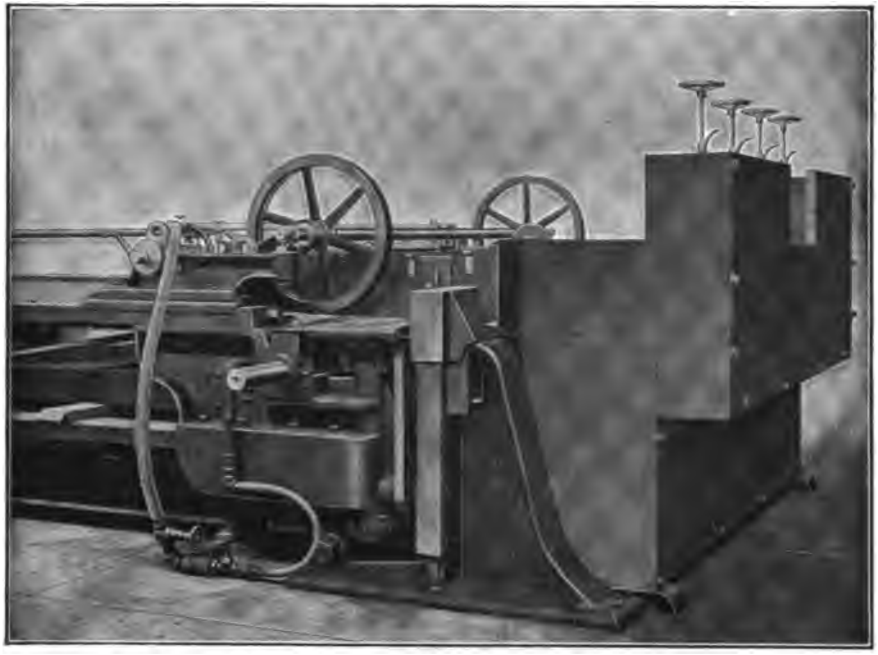
I should like to ask you the following question: "Are you aware that the United States Government, through this bureau, publishes a daily paper which transmits valuable trade information concerning market conditions in all parts of the world to American manufacturers and merchants?"

As an American business man, you can not afford to overlook a publication which secures information from three hundred consular officials, located in every part of the world, which contains special articles prepared by commercial attaches and agents of the Department of Commerce, stationed at the most important centers of foreign trade, and which gives to the American manufacturer a daily list of firms in foreign countries anxious to buy American goods and represent American manufacturers. It also contains a complete daily record of what the United States wants to buy or construct.

Daily *Commerce Reports* is a Government publication which every American business man should read with his morning mail. It furnishes him with a daily summary of the market conditions and prices of different lines of industry in the world's markets, and contains notices of current changes in the tariffs and trade-mark laws of foreign countries. It shows you from day to day what your competitors in other countries are doing.

Daily *Commerce Reports* furnishes you with direct cable information from American consuls and attaches and, through its supplements, supplies you with complete annual reviews concerning the trade and industries of every country in the world. It also gives you every morning a list of foreign trade opportunities with which you can get in touch and which may mean specific and immediate business for you.

Daily *Commerce Reports* will be delivered to your office by mail every morning for one year for the nominal sum of $2.50.



THE Ideal Fourdrinier Part is supported at breast roll by a link resting on bearings so designed that there is absolutely no friction on supporting points, and, therefore, no wear. No special foundation is required at the breast roll end of the Ideal, and the entire shaking mechanism is self-contained. It is not necessary even to bolt the stands to the floor, a clear indication of the smoothness and lack of friction in the construction of the shaking device. The vibration is as smooth as that of a clock pendulum.

It was an Ideal Fourdrinier (a 90-inch machine) which ran the first twenty months of its life with repairs averaging six cents per ton. Compare this with the record of your own machines.

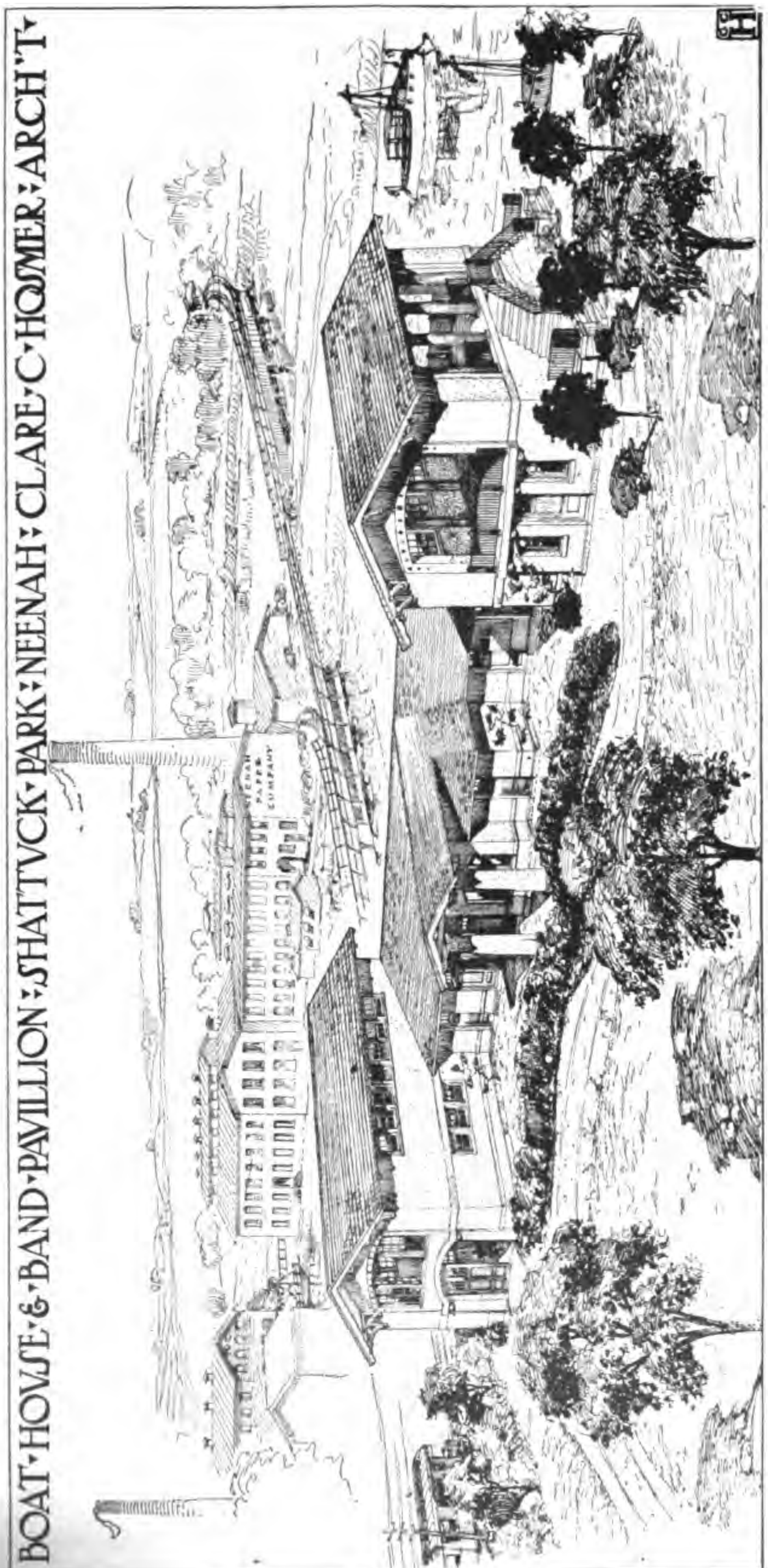
Send for bulletin describing the Ideal

The Sandy Hill Iron & Brass Works
Hudson Falls, N. Y.

What Shattuck Park Looks Like

[SPECIAL TO PAPER]

Appleton, Wis., Sept. 14—The ceremonies attending the presentation of Shattuck Park to the city of Neenah were described in last week's issue of Paper. The accompanying picture shows the buildings in the park, bordering the river, the middle section being for boat storage, the right-hand section being for a band stand, and the left-hand section being a boat repair shop. The park is very handsomely laid out with walks and drives ,trees and shrubbery, and transforms a place previously an eyesore into a place of bauety and utility. The work of preparing the park for its present purpose has taken two years.


BOAT·HOVSE·&·BAND·PAVILLION·SHATTVCK·PARK·NEENAH·CLARE·C·HOSMER·ARCH'T

Industrial Notes from the Northwest

[SPECIAL TO PAPER]

Appleton, Wis., Sept. 14—Contracts were awarded last week to Menasha and Appleton contractors for the construction of the new biulding for the plant of the International Wire Works at Menasha, whose incorporation was announced in this correspondence last week. Ground has been broken on the site given to the company by the city of Menasha, and the city is engaged in the grading of a new street which will furnish inlet and outlet to the plant.

An important announcement last week concerning electric power matters in this locality was one stating that John I. Beggs, the head man in traction affairs in the Fox river valley, had purchased the power plant at the Kilbourn dam, and also the power plant nearing completion at Prairie du Sac. There is said to be about 7,500 horsepower at Kilbourn and about 10,000 horsepower at Prairie du Sac, and the purchase price runs into the millions. The Appleton electric plant is under Mr. Beggs' control, and he has recently awarded contracts for additional equipment for it that will cost half a million dollars, and make it one of the most important power plants of the State. Mr. Beggs has declared himself to be a believer in Wisconsin waterpower, and his actions of late certainly seem to bear out his words.

The last of the pulpwood rafts to cross Lake Superior from Port Arthur to Ashland got in last week. It was one of the largest of the season, containing about 8,000 cords of wood. The rafting season this year has been a very successful one, there having been no losses. Last year several rafts on Superior and Michigan suffered severely.

The Appleyard interests have purchased the Big Falls waterpower near Ladysmith. It is said to be the intention of the purchasers to build an electric plant and transmission line, the line to extend from Ladysmith to Mellen, where it will join the present power line of the Appleyard company and supplement the current that is now going to Ashland. It would take about a year to get the improvement completed.

In deference to the representations of the paper manufacturers with mills on the "Island" close by, the Appleton city commissioners have decided to rebuild the Lake Street bridge in Appleton, which has been out of commission for many months past. There is no real necessity for this bridge except in the event that the main Lake Street bridge should from any cause become impassable.

Albert Kuehl, employed in the mill of the Bergstrom Paper Company, at Neenah, smashed one finger in the machinery last week.

We learn from the *Journal of Industrial and Engineering Chemistry* that the D. M. Bare Paper Company, Roaring Springs, Pa., have retained Richard K. Meade, of Baltimore, Md., to prepare plans and to superintend the construction of a lime recovery plant. The system employed will contain a number of novel features not heretofore incorporated in such plants. The construction will be of the most substantial type and the buildings of steel.

J. L. & D. S. RIKER
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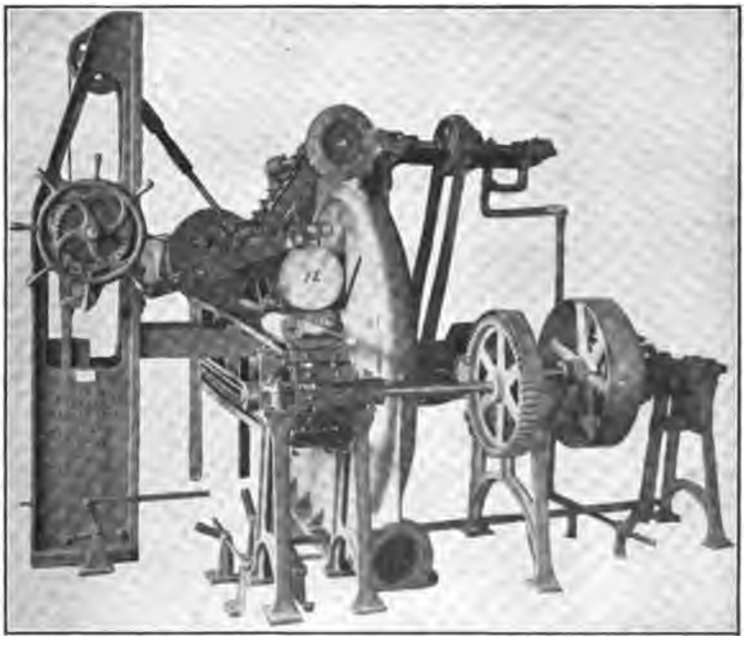

Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today]

The Appleton Machine Co.
APPLETON, WIS., U. S. A.

THE MARKETS

NEW YORK, September 14, 1915.

MECHANICAL PULP

General conditions governing the market for groundwood have not changed during the week under review. Owing to favorable water conditions newsprint plants are grinding ample supplies of pulp for their own immediate needs and are able to store away some for future requirements as well. This in part accounts for the slow demand for groundwood, the transactions for the week being few and unimportant, though about the usual amount of business has been done in withdrawals on outstanding orders. Quotations ruled nominally steady at the previous range, or say, $16 to $16.50 for No. 1 and $14.50 to $15.50, f, o. b.. mill.

DOMESTIC AND FOREIGN CHEMICAL PULP

The disinclination exhibited by large consumers of chemical fiber to meet the views of holders has led to a decided falling off in the buying movement for the week just ended. Inquiries have been fairly numerous but buyers are holding off, as a rule, asserting that values have touched prohibitive high levels. Advices from Scandinavia give no promise of lower prices, as most of the mills have booked their production for the remainder of the year for delivery to European mills. Mills in Norway and Sweden are reported to be turning out a normal amount of pulp despite a shortage of raw materials. Prices abroad have been moving upward and show further appreciations of 15 to 20 percent during the past three weeks, and local importers look for still higher levels in the near future. Little has been done in spot dock lots owing to the limited amount of stock available. Meanwhile quotations have been raised on imported 5 to 25 cents on all descriptions.

Sulphite, foreign—		Soda, domestic—	
Bleached, ex-dock	3.00 @ 3.10	bleached delivered	2.20@ 2.30
Unbleached, ex-dock	1.05 @ 2.15	Scandinavian Kraft	1.90 @ 1.95
Sulphite, domestic—			
Bleached, ex-dock	2.70 @ 2.80		
Unbleached, ex-dock	2.00 @ 2.15		

BAGGING, ROPE, ETC.

The tendency of values on bagging and rope continues upward and the market is firmer for nearly all varieties. Spot stocks of rope and bagging have dwindled to small proportions, under a good demand and light arrivals from abroad. Quotations closed stronger showing further appreciations of 15c to 50c on most lines in demand. Toward the close of the market buyers refused to meet the recent advance in values, and a general quietude was apparent.

Gunny, No. 1	1.85 @ 1.90	Wool Tares, light	1.65 @ 1.75
No. 1 Mill run	1.45 @ 1.70	Wool Tares, heavy	1.60 @ 1.70
Domestic	1.60 @ 1.70	Foreign Manila rope	2.60 @ 2.65
Light Burlap	1.60 @ 1.75	Domestic Rope	2.75 @ 2.85
Mixed Bagging	1.00 @ 1.05	Mixed Rope	1.05 @ 1.10
Sound Bagging	1.20 @ 1.30	Flax Waste	3.45 @ 4.00

IMPORTED RAGS

There has been a slight improvement in the demand, which resulted in sales of fair lines of various kinds of rags at steadier prices. Spot supplies are large but a gradual diminution is looked for, owing to light arrivals which are likely to grow less throughout the rest of the year. German blue cottons and light prints were advanced 5c while the balance of the list closed unchanged.

German Blue Cottons	2.20 @ 2.25	German Linen Blues	3.45 @ 4.15
Dutch Blues	2.20 @ 2.30	German Linen, Gra[illegible]	4.45 @ 5.28
French Light Blues	2.20 @ 2.45	German S. P. F.'s	3.45 @ 3.65
New Light Prints	3.70 @ 4.45	German Light Prints	1.95 @ 2.45
New Mixed Prints	2.95 @ 3.40	Dark Colored Cottons	1.10 @ 1.20

DOMESTIC RAGS

Trading in rags has been slow. Inquiries were more numerout, but at prices below seller's views. The bulk of sales for the week comprised small lots for immediate delivery at and below current quotations. Dealers have become more optimistic and look for a gradual improvement in the demand during the early part of next month. Satinette garments closed higher, most dealers naming 20c over recent quotations, while the balance of the list closed unchanged and steadier.

New Shirt Cuttings, No. 1	5.20 @ 5.40	No. 1 Whites	2.70 @ 3.20
New Shirt Cuttings, No. 2	3.45 @ 3.65	Soiled Whites, street	1.15 @ 1.25
Fancy Shirt Cuttings	3.30 @ 3.60	Soiled Whites, house	1.75 @ 1.90
New Blue Cottons	2.70 @ 3.15	Thirds and Blues	1.30 @ 1.40
New Dark Cotton	1.45 @ 1.70	Satinette Garments	1.10 @ 1.20
New Unbld ctgs	5.45 @ 6.00	No. 3 Satinettes	1.00 @ 1.05
New Black Cottons	1.70 @ 1.95	No. 4 Satinettes	.85 @ .90
		No. 1 Tailor's Rags	.70 @ .75

TWINES

Unsettled and easier primary markets for the raw materials led to a lack of confidence in the market for both rope and twines. Orders booked for domestic as well as export accounts were small at about current quotations for prompt delivery. The close was quiet and the future course of prices is regarded in trade circles as most uncertain.

No. 1 Hard White Shavings	2.35 @ 2.40	White Blank News	1.00 @ 1.05
No. 2 Hard White Shavings	1.95 @ 2.00	Extra Manila Cuttings	.85 @ .95
No. 1 Soft White Shavings	1.60 @ 1.70	New Manila	1.25 @ 1.35
No. 1 Colored Shavings	.75 @ .85	No. 1 Manila	.50 @ .55
No. 2 Colored Shavings	.55 @ .60	No. 2 Manila	.25 @ .35
Magazine Flat Stock	.80 @ .85	Box Board Chips	.15 @ .20
No. 1 Crumpled	.65 @ .70	Bogus and Mill Wrappers	.40 @ .45
Solid Ledger Stock	1.70 @ 1.80	Strictly Overissue News	.40@ .50
Ledger Stock	1.30 @ 1.45	No. 1 Mixed	.27 @ 25
		Folded News	.30 @ .40
		Common papers	.15 @ .20

OLD PAPERS

The volume of sales for the week just ended was small and prices ruled wholly nominal without change. Of common papers several sizable lots have been traded in at and below current figures. Dealers are more optimistic and express increased confidence in the situation as they anticipate a renewal of the buying movement during the next month.

Sisal Hay	8½@ 9	Jute Twines, 36	11¾@12
Sisal Lath Yarn	8 @ 8½	Jute Twines, 46&60	11¼@11½
Manila Rope	13 @13½	Jute Twines, 4½&6	6¾@ 7¼
Manila Rope, No. 2	12 @12½	Paper Maker's Twine	6 @ 6½
Jute Rope	7¼ @ 7¾	B. C. Hemp, 18	17 @17½
Jute Wrapping Twines— 2 to 6 ply—		B. C. Hemp, 24	16½@16¾
No. 1	10½ @ 11	B. C. Hemp, 36	16 @16½
No. 2	8½@ 8¾	Amer. Hemp, 4½&6	14½@15
Jute Twines, 18	12¾@13		
Jute Twines, 24	12¼@12½		

CHEMICALS

The strong tendency of values covering the entire list of papermaking chemicals has been fully maintained under a good demand and limited offerings. Bleaching powder is finding a good outlet at 1½c and upward for spot lots, as to

Continued on page 36

Telephone {1700 1701} Broad Cable Address, "Lagerlot Newyork"
Scandinavian-American
Trading Company
PRODUCE EXCHANGE BUILDING, NEW YORK
IMPORTERS AND EXPORTERS OF
FOREIGN AND DOMESTIC
WOOD PULP
OF ALL KINDS
AND
PAPER MILL SUPPLIES
HANS LAGERLÖF, Pres.

Newark, New Jersey,
December 18th, 1914

Messrs. Bahr Bros. Mfg. Co.,
Marion, Ind.

Gentlemen:

We wish to advise you that the Beater Bed Plates you sent us are the best we ever had.

Yours truly,
Albey Brothers,
(Signed) I. S. Albey

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BUCHANAN & BOLT WIRE CO.
HOLYOKE, MASS.
OUR SPECIALTY
FINE WIRES FOR MAGAZINE AND BOOK PAPERS
Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires
Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.
QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON
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New Cuttings, Jute Stock
Sizing
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SODA PULPS
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Makers of First Class
LINEN LEDGER and RECORD PAPER
for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records
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Brown's Papers have always received the highest awards whenever exhibited in competition with other makes
Mills established 1850
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SYDNEY MELBOURNE WELLINGTON BOMBAY
Parsons Trading Company
Paper Export
Pulp Import
Paper Stock
STOCKHOLM BUENOS AIRES HAVANA MEXICO
NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

quantity and make; contracts covering 1916 delivery met with sizable sales at 1.35c and over as to terms of sale. Caustic soda closed strong under an active demand and large sales at 4¾c to 5c a pound for 60 percent, as to quantity, on the spot; contracts met with fair sales at 1¾c and upward for supplies for delivery over next year. Sal soda found a fair outlet at .60c. to .75c for bareled supplies as to size of order, f. o. b. shipping point; spot lots of concentrated sold at 1½c and upward as to quantity. Alum ruled firm at 4¾c to 5½c for ground and at 5½c to 6c for powdered, while sulphate of alumina brought 1⅝c to 2c. Brimstone closed steady at $22 to $22.50 a long ton. China clay moved along slowly at $7.50 and upward for domestic and at $12 for imported, on the spot, as to quantity and quality.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended September 11, 1915

WOODPULP

Perkins, Goodwin & Co., str. Jemtland, Gothenburg, 360 bs. (40 tons) dry sulphite.
Felix Salomon & Co., str. Hellig Olav, Copenhagen, 2,175 bs. (435 tons) dry sulphite.
M. Gottesman & Son, by same, 300 bs. (50 tons) dry sulphite.
J Andersen & Co., by same, 900 bs. (100 tons) dry sulphite.
Bulkley, Dunton & Co., by same, Christiania, 150 bs. (30 tons) dry sulphite.
J. Andersen & Co., by same, 383 bs. (43 tons) dry sulphite.
E. Butterworth & Co., by same, 96 bs. (12 tons) dry sulphite.
Tidewater Paper Mills, schr. Edward H. Blake, Bridgewater, 1,776 bs. (886 tons) woodpulp.

MISCELLANEOUS PAPER STOCK

Marx Maier, str. Atherstone, Havre, 452 bs. rags.
Marx Maier, str. Nieuw Amsterdam, Rotterdam, 190 bs. bagging.
W. O. Davey & Co., str. Cretic, Liverpool, 22 bs. old manila shakings, 181 coils old manila rope.
Irving Nat'l Bank, str. Cameronia, Glasgow, 62 bs. paper stock.
Guaranty Trust Co., by same, 6 bs. paper stock.
E. Butterworth & Co., str. Urbino, Hull, 92 bs. old bagging.
Brown Bros. & Co., str. Ryndam, Rotterdam, 87 bs. paper stock.
E. Butterworth & Co., str. Ilvington Court, Havre, 44 bs. rags.

CHEMICALS

Arnold Hoffman & Co., str. Saxonia, Liverpool, 172 csks. bleaching powder.

OTHER PORT MANIFESTS

AT BOSTON

Scandinavian American Trading Co., str. Louisiana, Copenhagen, 700 bs. (100 tons) woodpulp.
E. Butterworth & Co., str. Urbino, Hull, 98 bs. bagging, 106 bs. card waste
T. McClelland, by same, 128 bs. flax waste.
Castle, Gottheil & Overton, by same, 17 bs. linen, 22 bs. cotton waste.
Brown Bros. & Co., by same, 306 coils, 44 bdls. old rope.

Continued on page 38

Mendelson Bros. Paper Stock Company
Packers of all grades of
PAPER STOCK
General Offices: Karpen Bldg., 900 Michigan Blvd.
Daily Capacity 200,000 Lbs.
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COLUMBIAN is our first quality—a better grade is not made.
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UNION BRONZE SUCTION BOX PLATES
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THE ORIGINAL Over 1,000 in Successful Operation.
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Is First and Last Designed to Make the Cleanest Paper Possible

Self Cleaning, it prevents the accumulation of strings and lumps, permitting longer runs.

Mechanically—the present type is so constructed that the cost of up-keep is *positively less* than with any other screen we know.

Wandel Screen Mfg. Co. : East Walpole, Mass.

Imports—Rags and Paper Stock

Continued from page 36

AT PHILADELPHIA

Nat'l City Bank, by same, 350 bs. (70 tons) woodpulp.

Perkins, Goodwin & Co., str. Jemtland, Gothenburg, 2,195 bs. (439 tons) woodpulp.

American Exp. Co., str. West Point, London, 91 bs. old rope, 212 bs. waste paper.

W. S. Tilden & Co., by same, 50 bs. jute waste.

Baring Bros. & Co., str. Lord Charlmont, Fowey, 376 csks. (3,184 tons) china clay.

Foreign Trade Opportunities

AMERICAN PAPER WANTED IN GREECE

A firm of commission agents in Greece informs an American consular officer that it desires to communicate with American exporters of all kinds of writing paper, blotting paper, and typewriter and carbon paper. Quotations are desired f. o. b. New York. The first order will be paid for in cash, but later the firm will ask for usual credit terms. Samples and full information should be sent at once. Samples may be sent by parcel post. Correspondence may be in English. References are given. In communicating with the Bureau of Foreign and Domestic Commerce, refer to File No. 18,255.

FRENCHMAN WANTS AMERICAN AGENCY

An American consular officer in a French port reports that an established paper agent in his district desires to represent American manufacturers of all classes of paper, principally for packing and newspaper purposes. Correspondence should be in French. Refer to File No. 18,187.

AN OPENING IN SERBIA

A firm in the United States informs the Bureau that it is in receipt of a letter from a company in Serbia asking for samples, price lists, and full information relative to all kinds of paper, especially print paper. Quotations should be made c. i. f. Saloniki, including war-risk insurance. Refer to File No. 18,250.

PAPER MACHINE PARTS WANTED

The commercial attaché of the Department of Commerce in Russia transmits the name and address of a business man in that country who desires to communicate with American manufacturers and exporters of phosphor bronze wire gauze in large quantities and white cloth, similar to the samples which may be examined at the bureau or its branch offices. Sulphate of aluminum is also desired. The man wishes to receive offers by cable. He states that he is ready to pay cash. He also desires to make agency connections. Quote File No. 18,052.

CIGARETTE PAPER FOR HONDURAS

A business man in Honduras informs an American consular officer that he is in the market for about 100 reams of cigarette paper. The paper should be in reams of about 500 sheets, size about 20 inches by 29 inches. Quotations should be made f. o. b. New Orleans or New York. The quality, weight, and grain should be similar to the sample which may be examined at the Bureau or its branch offices. (Refer to File No. 64701.) Samples and prices are also desired by the American consular officer. In writing the Bureau on the general subject quote File No. 18212.

AN INQUIRY FOR NEWSPRINT PAPER

A business man in the Netherlands informs an American consular officer that he wishes to correspond with American manufacturers of printing paper. Correspondence may be in English. Refer to File No. 18063.

AN INQUIRY FROM HONDURAS

A firm in Honduras informs an American consular officer that it desires to purchase 100,000 paper bags, ranging in size from ¼ pound to 25 pounds, at about 3 months intervals. Correspondence may be in English. Refer to File No. 18,218.

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Carefully Assorted Paper Stock, Rags and New Clippings

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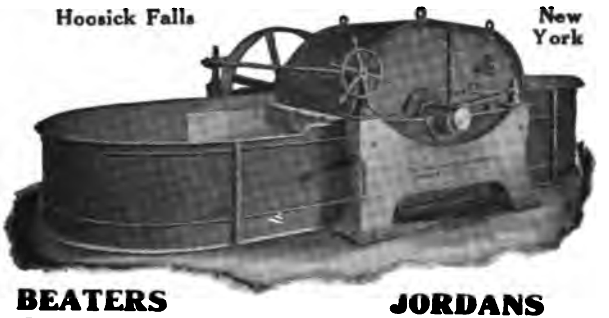

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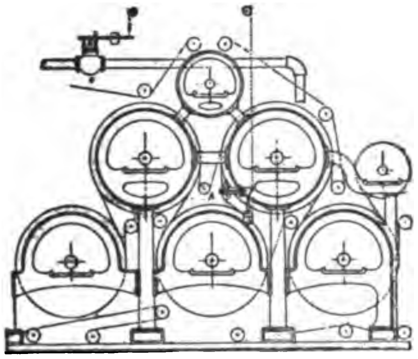

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Emerson Laboratory, Springfield, Mass.
Kleiner, Dr. E. G., and Knudsen, K. Hv., New York
Little, Arthur D., Inc., Boston, Mass.
Williams, F. M., Watertown, N. Y.

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ARC LAMPS
General Electric Co., Schenectady, N. Y.

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Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Ferguson, Hardy S., New York.
Field, William T., Watertown, N. Y.
Hardy, George F., New York.
Hungerford & Terry, Philadelphia, Pa.
Prather, H. B., Cleveland, O.
Smith, F. L., New York.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

ABESTINE PULP
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Quaker City Rubber Co., Phila., Pa.

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Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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Hardy & Sons Co., Wm. A., Fitchburg, Mass.

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Appleton Machine Co., Appleton, Wis.
Holyoke Machine Co., Holyoke, Mass.
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Jones, E. D., & Sons Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.

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Bahr Bros. Mfg. Co., Marion, Ind.

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Ladew Co., Inc., Ed. R., Glen Cove, N. Y.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rosendale-Reddaway Belting & Hose Co., Newark, N. J.

BINDERS' BOARD
Fandango Mills, Millburn, N. J.

BLEACHING POWDER
Arnold, Hoffman & Co., Inc., New York.
Klipstein & Co., A., New York.
Penn. Salt Mfg. Co., Philadelphia, Pa.

BOARD MACHINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

BOOK PAPER
American Writing Paper Co., Holyoke, Mass.
Oxford Paper Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.

BRASS WIRE CLOTH
Appleton Wire Works, Appleton, Wis.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Parsons Trading Co., New York.

BRIMSTONE
Union Sulphur Co., New York.

CALENDER ROLLS
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Farrell Foundry & Machine Co., Ansonia, Conn.

CALENDERS
Holyoke Machine Co., Holyoke, Mass.
Norwood Eng. Co., Florence, Mass.

CASEIN
Atterbury Bros., Inc., New York.
Kalbfleisch Co., Franklin H., New York.
Klipstein & Co., A., New York.

CASTINGS
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

CAUSTICIZING EQUIPMENT
Scott, Ernest, & Co., Fall River, Mass.

CHINA CLAY
Miner Edgar Co., Brooklyn, N. Y.
Morey & Company, Boston, Mass.

CIRCUIT BREAKERS
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

CLAYS
Miner Edgar Co., Brooklyn, N. Y.
Morey & Co., Boston, Mass.
So. Carolina Clay Co., West Chester, Pa.
St. Lawrence Talc Co., Natural Bridge, N. Y.

CLOSED FEED WATER HEATERS
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

COATED PAPERS
West Virginia Pulp & Paper Co., New York.

CONDENSERS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.
Wheeler, C. H. Mfg. Co., Philadelphia, Pa.

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CONVEYERS
Buffalo Forge Co., Buffalo, N. Y.
Garland Co., Bay City, Mich.

CORDAGE
Columbian Rope Co., Auburn, N. Y.

COUPLINGS
(Flexible)
General Electric Co., Schenectady, N. Y.

CUTTERS
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.

CYLINDER MOLDS
Black-Clawson Co., Hamilton, O.
Cheney Bigelow Wire Wks., Springfield, Mass.
Dilts Machine Works, Inc., Fulton, N. Y.
Eastwood Wire Mfg. Co., Belleville, N. J.
Improved Paper Machinery Co., Nashua, N. H.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

CYLINDER WIRES
Appleton Wire Works, Appleton, Wis.

DAMS AND RESERVOIRS
Field, William T., Watertown, N. Y.

DANDY ROLLS
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cheney Bigelow Wire Wks., Springfield, Mass.

DECKLE WEBBING
Morey & Company, Boston, Mass.

DIAPHRABMS
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

DIGESTERS
International Process Co., New York.
Swenson Evaporator Co., Chicago, Ill.

DIGESTER LININGS
Preston's Digester Lining Co., Ltd., Radcliffe, England.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

DRAINER BOTTOMS
Snell, Samuel, Company, Holyoke, Mass.

DRYER FELTS
Fitchburg Duck Mills, Fitchburg, Mass.
Morey & Company, Boston, Mass.

DRYING MACHINES
Buffalo Forge Co., Buffalo, N. Y.

DUSTERS
Noble & Wood Machine Co., Hoosick Falls, N. Y.

DYESTUFFS
Farbwerke-Hoechst Co., New York.
Heller & Merz Co., New York.
Klipstein & Co., A., New York.

ELECTRIC DRIVES
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC GENERATORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC TRANSFORMERS
General Electric Co., Schenectady, N. Y.

ELEVATORS
(Portable)
Economy Eng. Co., Chicago, Ill.

ENCLOSED ARC LAMPS
General Electric Co., Schenectady, N. Y.

ENGINEERS
Barker, E. R., Boston, Mass.
Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Field, William T., Watertown, N. Y.
Little, Arthur D., Boston, Mass.
Scott & Co., Ernest, Fall River, Mass.
Smith, F. L., New York.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

ENGINES
Buffalo Forge Co., Buffalo, N. Y.
Westinghouse Machine Co., E. Pittsburgh, Pa.

EVAPORATORS
International Process Co., New York.
Scott & Co., Ernest, Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.

FANS
(Exhaust)
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

FASTENERS
(For Screen Plates)
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

FEED WATER PURIFIERS
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

FELTS AND JACKETS
Appleton Woolen Mills, Appleton, Wis.
Bulkley, Dunton & Co., New York.
Castle, Gottheil & Overton, New York.
Heimbach, Thomas Josef, Ltd., Düren, Rheinland, Germany.
Huyck & Sons, F. C., Albany, N. Y.
Lockport Felt Co., Lockport, N. Y.
Morey & Co., Boston, Mass.
Orr Felt & Blanket Co., Piqua, O.
Shuler & Benninghofen, Hamilton, O.
Waterbury Felt Co., Skaneateles Falls, N. Y.

FILTERS
Hungerford & Terry, Inc., Philadelphia, Pa.
Norwood Eng. Co., Florence, Mass.
Scaife & Sons Co., Wm. L., Pittsburgh, Pa.

FILTERING SYSTEMS
Improved Paper Machinery Co., Nashua, N. H.

FLAMING ARC LAMPS
General Electric Co., Schenectady, N. Y.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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New York

Buyers' Guide and Information Bureau—Continued

FOURDRINIER WIRES
Appleton Wire Works Co., Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm., Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES
Swenson Evaporator Co., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

GENERATORS AND MOTORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS
Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holvoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP
Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE
Fox Paper Company, Lockland, O.

HOSE
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

HYDROELECTRIC PLANTS
Field, William T., Watertown, N. Y.

JORDAN ENGINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

JORDAN LININGS
Bahr Bros. Mfg. Co., Marion, Ind.

KNIFE GRINDERS
Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES
Dilts Machine Works, Inc., Fulton, N. Y.
L. & I. J. White Company, Buffalo, N. Y.

KRAFT PAPER
Berlin Mills Co., Portland, Me.
Fox Paper Co., Lockland, O.
Rantoul Co., C. W., New York.

KRAFT SODA PULP
Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

LININGS FOR SULPHITE DIGESTERS
Preston's Digester Lining Co., Ltd., Radcliffe, England.

LUMB GOVERNORS
International Process Co., New York.

LUMBER
Riordon Paper Co., Montreal, Quebec, Can.

MECHANICAL STOKERS
Westinghouse Machine Co., E. Pittsburgh, Pa.

METERS
(Flow, Air, Gas, Water)
General Electric Co., Schenectady, N. Y.

MILL CONSTRUCTION
Field, William T., Watertown, N. Y.

MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co. E. Pittsburgh, Pa.

PACKING
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

PAPER AND PAPER MACHINERY
Appleton Machine Co., Appleton, Wis.
Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glen Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Improved Paper Machinery Co., Nashua, N. H.
International Process Co., New York.
Jones & Sons Co., E. D., Pittsfield, Mass.
Lockport Machine Co., Lockport, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Eng. Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

PAPER DEALERS
Pulp & Paper Trading Co., New York.

PAPER EXPORTERS
Berlin Mills Co., Portland, Me.
Cliff Paper Co., Niagara Falls, N. Y.
Fox Paper Company, Lockland, O.
Parsons Trading Co., New York.

PAPERMAKERS' SUPPLIES
Atterbury Bros., Inc., New York.
Castle, Gottheil & Overton, New York.
Heller & Merz, New York.
Morey & Company, Boston, Mass.
Parsons Trading Co., New York.

PAPER MANUFACTURERS
American Writing Paper Co., Holyoke, Mass.
Berlin Mills Co., Portland, Me.
Brown, L. L., Paper Co., Adams, Mass.
Cliff Paper Co., Niagara Falls, N. Y.
Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
Riordon Paper Co., Montreal, Canada.
St. Regis Paper Co., Watertown, N. Y.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

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Thrasher Dusters
Fan Dusters
Arm Dusters
Railroad Dusters
Devil Dusters
WHEAT'S Rag Dusters
BEATER BARS
Solid Steel, Forged
WAGG'S Steel or Stone
Vertical Stuff Chests
Horizontal Stuff Chests
Mill Elevators
Shafting
Gearing
BED PLATES
Sheet Steel
Solid Steel
WAGG'S Stone
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Buyers' Guide and Information Bureau—Continued

PAPER MILL CHEMISTS

Emerson Laboratory, Springfield, Mass.
Kleiner, Dr. E. G., and Knudsen, K. Hv., New York.
Little, Arthur D., Inc., Boston, Mass.
Williams, F. M., Watertown, N. Y.

PAPER MILL ENGINES

International Process Co., New York.
Westinghouse Machine Co., E. Pittsburgh, Pa.

PAPER STOCK

Aterbury Bros., Inc., New York.
Hofeller Co., Theodore, Buffalo, N. Y.
Parsons Trading Co., New York.
Salomon, Felix & Co., New York.
Wilkinson Bros. & Co., New York.

PAPER TESTER

Perkins, B. F., & Son, Holyoke, Mass.

PAPER THICKNESS GAUGES

Perkins, B. F., & Son, Holyoke, Mass.
Ticonderoga Machine Co., Ticonderoga, N. Y.

PASTING AND SATURATING MACHINERY

Atterbury Bros., Inc., New York.

PORTABLE ELEVATORS

Economy Eng. Co., Chicago, Ill.

POWER TRANSMISSION MACHINERY

General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan, Co., York, Pa.

PULP MILL SCREENS

(Brass and Copper)

Voith, J. M., New York.

PULP THICKENERS

Glens Falls Machine Works, Glens Falls, N. Y.

PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

PUMPS

Black-Clawson Co., Hamilton, O.
Buffalo Forge Co., Buffalo, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Glens Falls Machine Works, Glens Falls, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

RAG CUTTERS

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

Atterbury Bros., Inc., New York.
Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

RECORDING INSTRUMENTS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

REFINERS

Pusey & Jones Co., Wilmington, Del.
Voith, J. M., New York.

REINFORCED CONCRETE CONSTRUCTION

Field, William T., Watertown, N. Y.

ROLL BARS AND BEDPLATES

Dilts Machine Works, Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Farrell Foundry & Machine Co., Ansonia, Conn.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

ROLLERS

Boston Belting Co., Boston, Mass.

ROSIN SIZE

Arabol Mfg. Co., New York.
National Rosin, Oil & Size Co., New York.
Vera Chem. Co., N. Milwaukee, Wis.

ROTARY INCINERATING FURNACES

Scott, Ernest, & Co., Fall River, Mass.

RUBBER PRODUCTS

Fitchburg Duck Mills, Fitchburg, Mass.

SAVE-ALLS

Glens Falls Machine Works, Glens Falls, N. Y.

SCALES

Howe Scale Co., New York.

SCREENS

Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

SCREEN PLATES

Hardy & Sons, Wm. A. Fitchburg, Mass.
Union Screen Plate Co., Fitchburg, Mass.

SCREWS

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SHEATHING PAPER

Berlin Mills Company, Portland, Me.

SIZINGS

Arabol Mfg. Co., New York.
Atterbury Bros., Inc., New York.
National Rosin, Oil & Size Co., New York.

SLITTERS AND REWINDERS

Black-Clawson Co., Hamilton, O.
Cameron Machine Co., Brooklyn, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N. Y.

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Book,
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Lithograph Papers

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Dexter & Bowles, Springfield, Mass.
Oxford Paper Co., New York.
Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

SPIRAL PIPE

American Spiral Pipe Works, New York.

STEAM REGULATORS

Pickles, W. F., Buckland, Conn.

SUCTION PLATES

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SULPHATE PULP

Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

SULPHITE FITTINGS

Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE MILL EQUIPMENT

Barker, E. R., Boston, Mass.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE PULP

Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
Berlin Mills Co., Portland, Me.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

SULPHUR

Union Sulphur Co., New York.

SULPHUR BURNERS

Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

SWITCHBOARDS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TIERING MACHINES

(In Piling Cases)

Economy Eng. Co., Chicago, Ill.

TRANSFORMERS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TRUCKS

Howe Scale Co., New York.

TURBINES

(Steam)

General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

TWINES

Columbian Rope Co., Auburn, N. Y.

UNBLEACHED SULPHITE FIBER

Riordon Pulp & Paper Co., Ltd., Montreal, Que., Canada.
St. Regis Paper Co., Watertown, N. Y.

ULTRAMARINE

Heller & Merz Co., New York.

VENTILATING FANS

Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WATER-COOLING TOWERS

Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS

Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS

Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS

Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

WELDING OUTFITS

(Arc)

General Electric Co., Schenectady, N. Y.

WET MACHINES

Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES

Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks, Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.

WOOD PRESERVATIVE

Carbolineum Wood Preserving Co., Milwaukee, Wis.

WOODPULP IMPORTERS

Andersen & Co., J., New York.
Atterbury, Bros., Inc., New York.
Castle, Gottheil & Overton, New York.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

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EMPLOYERS WANTING HELP should send a statement of their requirements to the Labor Bureau of PAPER, 117 East 24th street, New York City. Applications for work are constantly being received from men in all parts of the country.

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SEPTEMBER 22, 1915

Vol. XVII
No. 2

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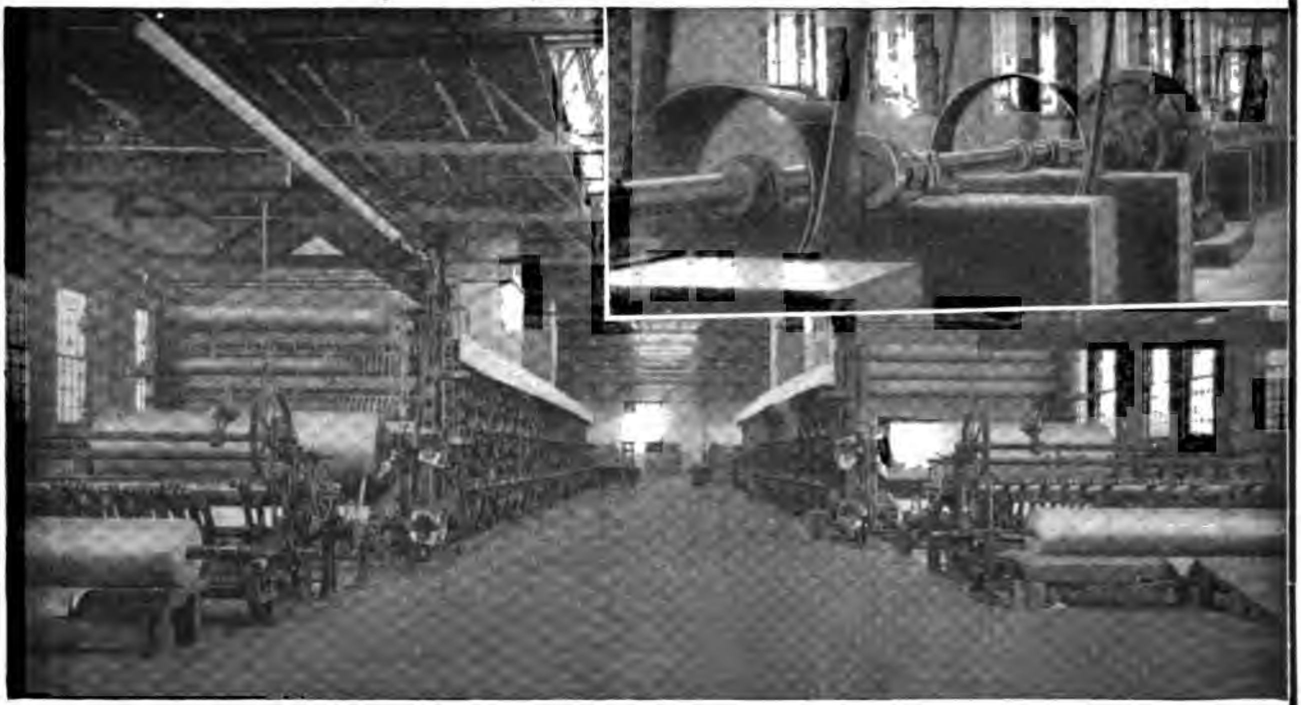

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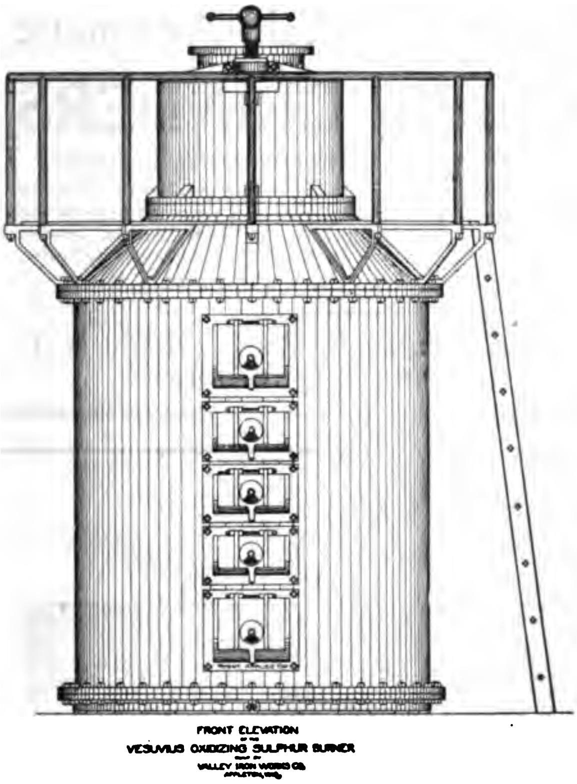

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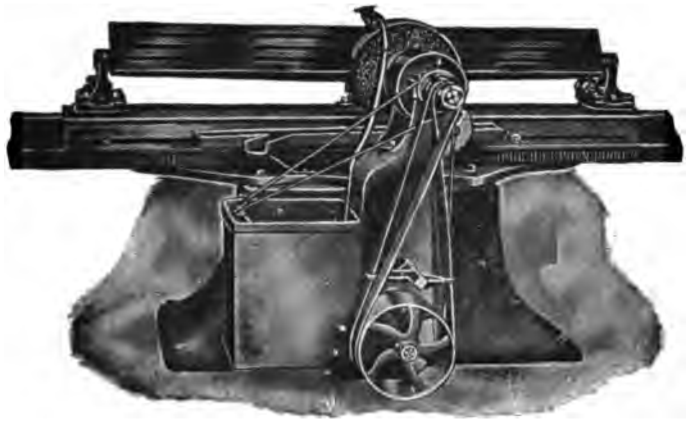

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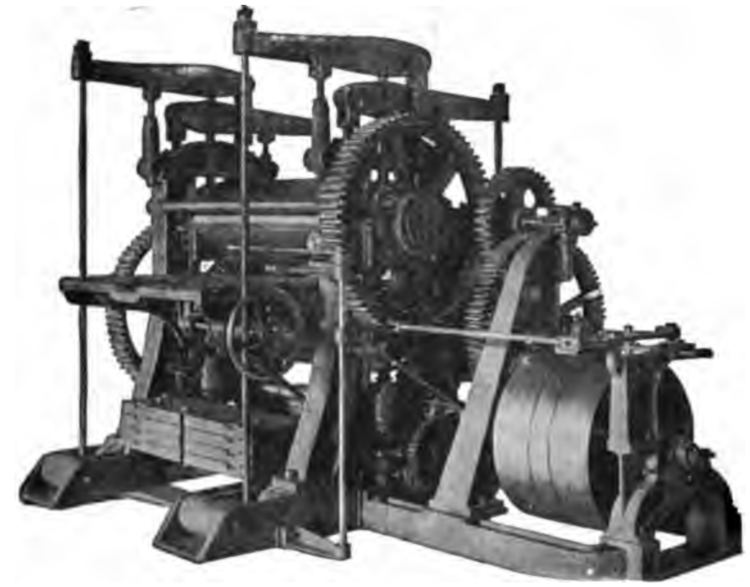

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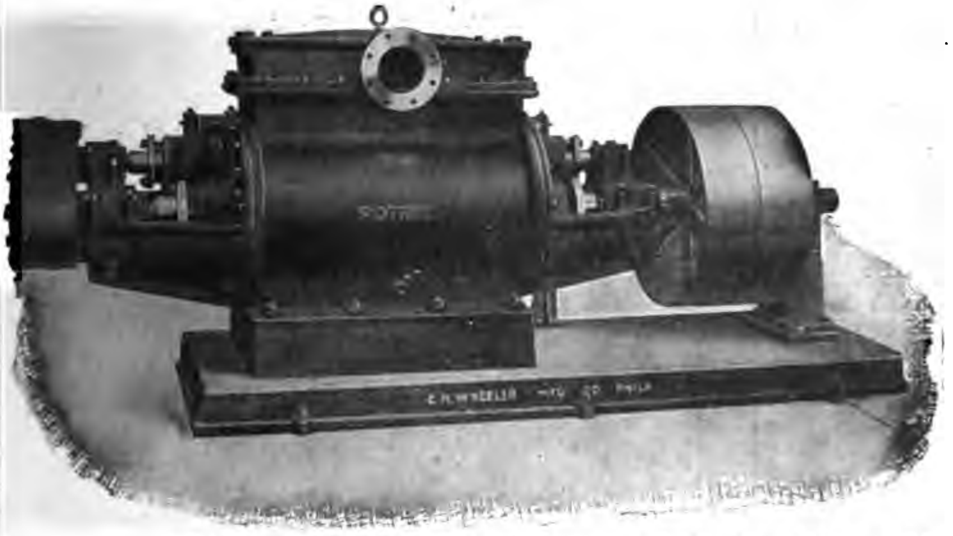

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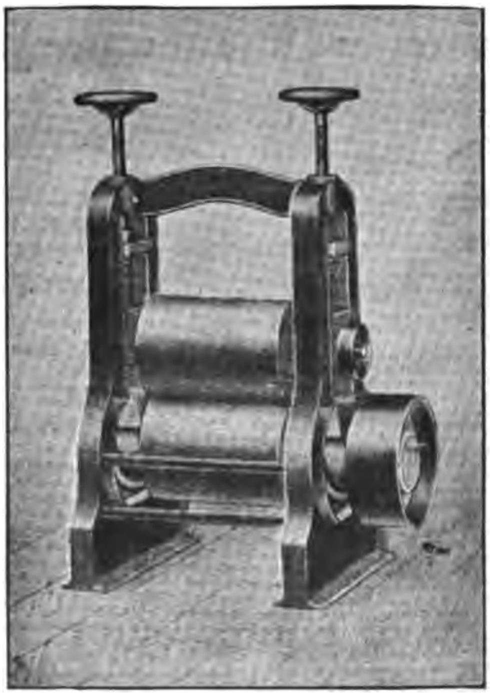

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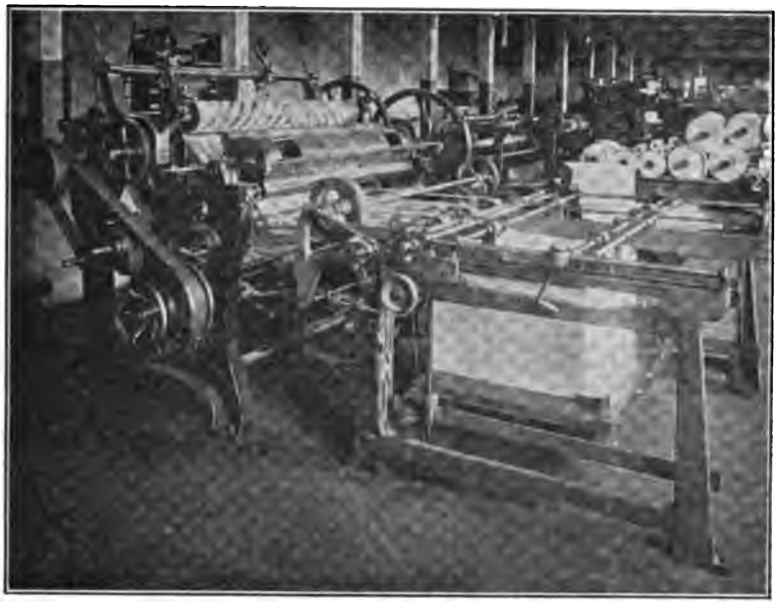

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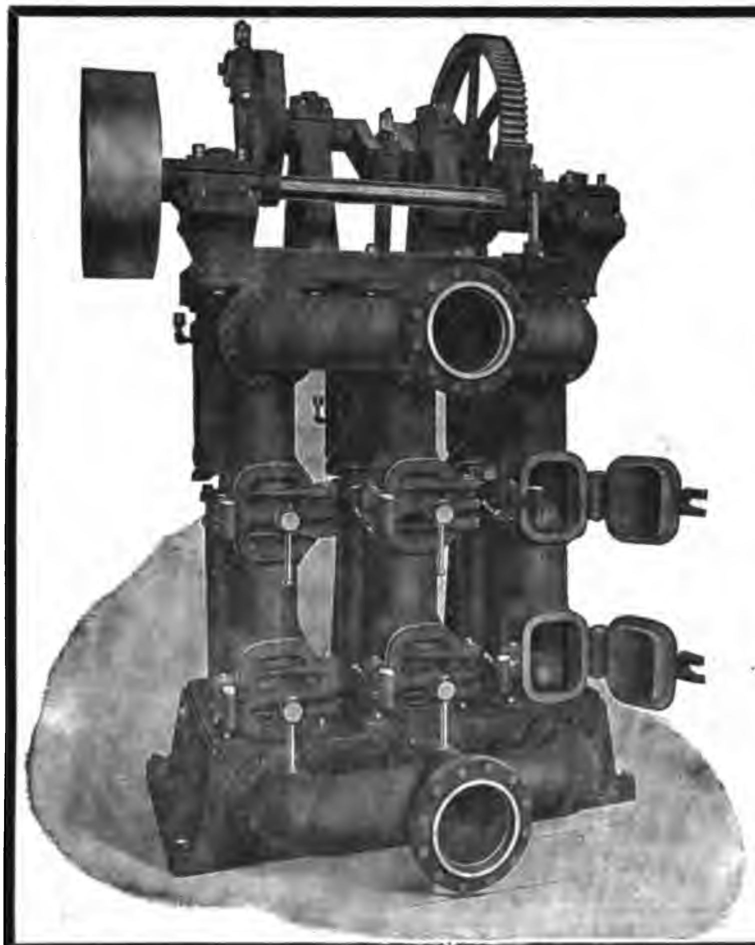

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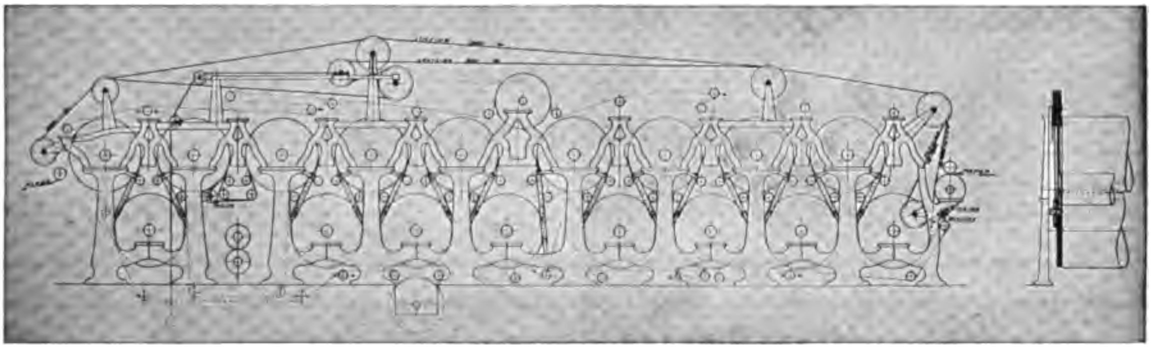

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· EVERYTHING · REGARDING · THE · MANUFACTURE ·
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Vol. XVII SEPTEMBER 22, 1915 No. 2

Buying Coal on Specifications and Tests

Importance of Frequent Tests and the Need of Specifications in Coal Purchasing

THE selection and purchase of coal are important factors in the economical operation of power plants. As the editor of *The Engineering Magazine* remarks in an introductory note to an article by Gerald B. Gould on Waste in the Selection and Purchase of Coal, a large proportion of power plant managers purchase their coal with less regard to its qualities than they give to the composition of their feed water, and yet coal is the largest single element in the cost of power.

The importance of frequent tests in coal purchasing and the need of specifications are emphasized in Mr. Gould's article, for the full text of which readers are referred to *The Engineering Magazine* for September. The accompanying extracts will be found suggestive and informing for all coal consumers.

In the discussion of coal purchasing, Mr. Gould premises that the greatest need, at the present time, is to "state the case"; to find out, if we can, just what this problem of coal purchase is, what it embraces, and what the duties are of those intrusted with the selection and purchase of coal. He therefore undertakes to analyze the manufacturer's coal purchase problem in such a way that each part of it may be seen in its relation to the others.

The manufacturer's coal problem is divided into three quite distinct divisions: the selection of coal, the purchase of coal, and the use of coal. The selection of coal falls into two divisions: (1) the determination of the character and general class of coal to be used, and (2) the selection of the best coal of that class for the money. These questions of selection and purchase should not be confounded with the economy in use of the coal once bought. These three phases of the matter, the selection, purchase, and use of coal, are very intimately interrelated, and a failure to distinguish clearly between them is the cause of much misunderstanding.

PLANT LOCATION AS A FACTOR IN COAL SELECTION

The solution of the coal problem should properly begin before the plant is built, but this in the past has seldom been done, and today is often overlooked. . . .

We must assume that the majority of manufacturing plants have had their location fixed before the question of coal, at least in any detail, has been considered. A preliminary survey, taking into consideration the general character of available coals and freight rates, will assign to any given locality one, or perhaps two, broad classes of coal as producing at that point the largest amount of heat for a dollar. Then the power plant should be designed for this most economical class of coal. . . . We are, however, more concerned here with the problem of the plant which is already running, and, for the sake of simplicity, it is assumed that no changes in boiler room equipment are desired.

PLANT REQUIREMENTS

Now we have the problem of fitting the coal to the plant, rather than the plant to the coal, and we have placed upon us limitations in the shape of plant design and operating conditions. Is the combustion space small, and therefore adapted to anthracite which has from 4 to 8 percent volatile matter, or will it permit of the efficient combustion of higher volatile coals which may run as high as 35 percent in the East and over 40 percent in the Middle West? Is the plant subject to smoke regulations? How far can we go in the way of getting a high volatile coal without making too much smoke, taking into consideration the operating methods which may be normally expected in the plant in question? Does the load vary so rapidly that we must have a coal which will respond quickly, or can we get along with a slower burning, lower volatile coal?

Is the boiler capacity ample, or must the boilers be crowded to the limit? This question has an important bearing on the quality of the coal. If the overload requirements are not too great it may prove economical to use a lower grade coal at a lower price, while on the other hand if the boilers are working to the limit, even part of the time, one of the higher priced coals of very high grade will have to be considered. Then, too, if the fires have to be forced, we must look out for clinker trouble from coals with the ash at too low a fusing point, and from coals with too much sulphur, because a high fuel bed temperature and a rapid rate of combustion combined with excessive sulphur eats out grate bars too fast for comfort or economy. Much waste results because purchasers fail to analyze carefully their requirements and in consequence purchase more expensive coals than necessary. To purchase a coal with 0.75 percent sulphur when one with 1.50 percent can be used, or to select a coal running 6 percent in ash when 8 percent will serve satisfactorily, is wasteful, for most of the exceptionally high grade coals sell at a price which is out of proportion to their fuel value as compared with coals of average or little better than average quality. In other words, why pay for something which cannot be used?

Coal selection reaches its greatest efficiency when operating methods are thorough and efficient, and when the buyer is equipped not only with a thoroughly well trained technical staff, but also with accurate, complete, and continuous operating records and quite comprehensive records on the character and quality of available coals. Even so, it takes considerable experience on the part of the general manager who is endowed with these advantages to make the best use of them. In the average manufacturing plant the power plant operating methods are almost incredibly inefficient. The average industrial power plant is, therefore, handicapped at the start, insofar as thorough operating records and efficient operating methods affect the problem of coal selection and purchase.

QUALITATIVE RECORDS

The problem of securing accurate and extensive records on the quality of available coals *before* they are bought is also a hard one to solve, one almost impossible for the individual plant without some outside assistance. The coal trade as a whole has consistently opposed all publicity regarding coal values and has tried to discourage individual coal consumers from trying to obtain any definite information from an independent source. The only kind of publicity regarding coal quality which the coal trade in general has approved is about as valuable as the war news which gets past the British censor. This situation is slowly improving because coal consumers are waking up to the necessity of accurate information on coal values, and the pressure of this demand among a relatively small number of them has caused a few coal dealers to go after business on the basis of conservative statements which they can fulfill. An extension of this demand by consumers will eventually bring about a fairly satisfactory standardization of the coal market in spite of the obvious difficulties due to the great complexity of the product. . . .

One of the most common mistakes of those who are trying to get this coal purchase problem down to a businesslike basis is to jump all the way from the price of coal to the cost of a unit of power. The danger of this method is that it looks quite simple and very logical to a person who is not thoroughly familiar with the process of coal combustion and steam production. You often hear some such statement as this: "We know we are getting the very best coal for the money. Every year we try out several coals in the plant. We run operating tests for twenty-four hours on each coal, and figure out which one evaporates the largest amount of water for a dollar." Well, the object of buying coal for the power plant is to evaporate water at the least cost, so why isn't this test absolutely conclusive? There are a great many reasons.

In addition to the serious objection that this "evaporation" method limits the field of choice to too few coals and that the results are based upon only one small "trial shipment" (perhaps as little as a single car) of each coal, it embraces so many unknown factors that the results are very far from reliable. The combustion of coal in the furnace is one of the most intricate, delicately balanced processes in a manufacturing plant. The efficiency of combustion is constantly changing—it varies from minute to minute. A fireman may do well today and quite poorly tomorrow. The handling of the fires and the adjustment of drafts may be quite different to obtain equal combustion efficiency with two different coals. Seldom, surprisingly seldom, do you find an industrial power plant equipped so that anyone can tell anything about the efficiency of combustion. Bear in mind, I am speaking of the efficiency of *combustion* and not of the combined efficiency of furnace *and boiler*. . . . Some recent tests made by the Engineering Department of the University of Illinois furnish striking proof of the relation between combustion conditions and efficiency. When the thickness of the fire was increased from 7 to 10 inches, with a very slight increase in the draft over the fires, the percent of builder's rating developed dropped from 150 to 77, and the carbon dioxide (the best index of combustion efficiency) dropped from 9.8 to 6.5 percent, due to the difficulty in handling the fires which necessitated the admission of a large amount of excess air over the fires. In another case where the thickness of the fire was not changed but the draft over the fire was increased from 0.49 to 0.54 inches of water, the percent of builder's rating dropped from 143 to 100 and the carbon dioxide dropped from 8.6 percent to 6.6 percent.

Sometimes this method of coal selection is carried to the extreme of jumping clear through to the wattmeter without regard to changing load conditions, and of comparing a test made last year on one coal with a test made this year on another coal, which adds another uncertainty in the shape of a possible change in engine efficiency. This "evaporation" method will produce comparative figures of a fair degree of accuracy, if the plant is equipped so that continuous records are kept of CO_2 in the flue gases, water and coal weights, periodic readings of flue gas temperatures and feed water, and a laboratory test of the coal, and if the operating test is of at least a week's duration. . . .

There is only one legitimate purpose in trying out a coal in the plant, and that is to determine positively whether there are any physical properties of the coal which make it unsuited to the particular plant, such as clinkering, packing down on the grates, or adaptability to the mechanical features of automatic stokers. Every other factor in coal selection for steammaking can be determined more accurately in some less troublesome and less expensive manner.

PRELIMINARY SELECTION

Confining our attention for the present to semi-bituminous and bituminous coals there are four points which should have primary consideration in the preliminary selection of a kind of coal. These are the percentages of ash, sulphur, and volatile matter, and the fusing point of the ash. These questions should be answered: How high in ash can a coal go without reducing our capacity too far? How low can the fusing point of the ash go before we have clinker trouble under our operating conditions? How high a volatile coal can we use, considering our furnace design and smoke restrictions? The sulphur should be considered in relation to the rate of combustion, for with a slow rate of combustion coals higher in sulphur can be used more economically than coals very low in sulphur, which are usually higher in price in proportion to their fuel value. This kind of coal selection of course presupposes the use of the commercial coal test, frequently miscalled a "chemical analysis." . . .

Next comes the question of fuel value. The prices of the coals falling within the limits previously determined must be compared, taking into consideration the heat value of each coal. These data must be obtained from some independent source, and care should be taken not to base conclusions on too few tests of any one coal. All coals vary to a greater or less degree, depending upon the care in mining and preparation, and so a comparison of values based upon too few tests might give distorted results, perhaps making a poor coal show up much better than it would average or showing up a better coal worse than it would run over a period of months—either case might easily represent an appreciable loss.

CLASSIFICATION OF COALS

Attention has already been called in a general way to the complexity of the coal market, the absence of any standardization of the product from a commercial point of view, and the need of some such standardization.

Mr. Gould suggests a plan of commercial classification of coals, and then shows how great the complexity of the product really is. . . .

Last April, while talking with the manager of a manufacturing company, the writer discovered that he had settled upon a certain coal seven years ago. Ever since then he had bought that coal and paid $1.60 for it at the mines, apparently without giving it any further thought. He was going right on, in spite of the fact that at the very time of our meeting the soft coal market was so low, due chiefly to reduced demand, that nearly every semibituminous coal was selling from ten to twenty cents a ton lower than the normal price. Furthermore, he was not getting by any means the best coal he could for $1.60 in any market. This manager was deliberately throwing away upward of $1,000 a year simply because he had no basis for comparison; and he had not even tried to find out whether he could do better, although every other part of his business was run unusually carefully and efficiently. Similar cases can be found on every hand. . . .

To generalize on the whole question of coal selection is impossible and to go into all of the many details would overtax the reader's patience. The chief aim here is to indicate the lines along which the coal buyer must be prepared to work if he is to get his coal purchasing on anything like as efficient a basis as most of the other departments of his business.

IMPORTANCE OF FREQUENT TESTS

So far we have been concerned entirely with the preliminaries in coal buying—with what comes before the coal contract is signed. As a matter of fact it is the part which comes *before* you buy your coal which is the hardest to do effectively, thoroughly, and without a prohibitive amount of investigation, and at the same time it is the part which counts most in keeping the coal bill down. Something more must be done, however, both to make possible a really careful selection and to carry to a successful conclusion the combined work of coal selection and purchase; and that is frequent, systematic, and reliable testing of the coal you buy. These tests should not be expected to work any particular magic in themselves; they must be *used*. The coal test should be a regular arrival on the manager's desk, and it is a thing worth watching whether the coal is bought under specifications or not. . . .

It should be remembered that there are two steps and sometimes more before the effect of a poor shipment of coal gets from the consumer back to the really responsible party at the mine. You, the buyer, make a complaint to the selling department of the coal company, which in turn hands it along to the mine; or your complaint may go through the hands of a wholesaler, who is taking a part of the output of a certain mine, and thence to the mine. The quality of coal is very largely dependent upon the care used in mining it and preparing it for market. You simply cannot expect to have any effect on the mine unless you can back up your complaint with facts which are conclusive enough to convince the seller, and which also will give him definite material for a complaint to the mine. . . .

Coal tests should be made systematically, the frequency depending upon the amount of coal received and the method of delivery. If one is made only occasionally or when somebody happens to think of it, you are very likely to miss having it just at the time when it would be most important, or your test may show only the poorest lots and thus give you a distorted record of the average quality of coal received throughout the year. . . .

PURCHASING UNDER SPECIFICATION

The matter of coal specifications offers enough material for two articles of this length but just a word about specification buying is necessary to make a discussion of coal purchasing complete. Specifications have been left to the last because logically they come last in the solution of the coal purchase problem. Granted careful selection based upon adequate and reliable data, and granted systematic tests of the coal delivered, specifications are simply the finishing touch. It is usually better business to buy anything under specifications than not to. In buying coal, specifications, if properly drawn, will add to the economy of an already well developed coal selection and purchase plan in the long run. They are not the essence of fuel economy, or by any means the most important part of it. Specifications will not select your coal, nor will any kind of specification necessarily save money. Many sins have been laid at the door of specification buying which were really the faults of an imperfect method of coal selection. Unless you have available a considerable amount of comparative data it is easy to accept a standard of quality which is too low, resulting in a definite loss over what you could do without specifications. There is something attractive about the idea of buying under specifications; the business man easily grasps the soundness of the principle, but few coal buyers appreciate the technical difficulties and hidden dangers for the inexperienced that lie in the execution of the details.

Newsprint Shortage in England

Several English newspapers call attention to the growing scarcity of paper and notify their distributing agents to revise their orders to avoid "left overs." The United Kingdom in 1914 imported 296,000,000 pounds of newspaper on reels, valued at $7,000,000, of which 52-5 percent came from the United States and nearly 40 percent from Newfoundland; also 93,000,000 pounds of paper not on reels, worth $3,500,000, of which 41 percent came from Norway and 5 percent from the United States. British imports of paper during the first half of this year fell off slightly. Increased purchases of American paper on reels was counterbalanced by a decrease in American paper not on reels.—*Commerce Reports.*

Fine Papers by the Small Beating Engine

IT may have been nineteen or twenty years ago that I treated the subject of fine paper manufacture by the small beating engine at length in the *Wochenblatt für Papierfabrikation,* says a recent contributor to that journal. At that time it was not so much in these columns, but to a greater extent in private communications sent to me, that I was ridiculed for my pessimistic views. It was pointed out to me that the entire modern plan of production pressed toward big things, toward quantity, and that to this everything must conform. Annoyed because one of my superiors was among my opponents, I did not take up the subject again, but I thought, if no higher demands are made for a fine paper than are made for a common wrapping paper, these clamorers for "quantity" might be right. I have been for some years separated from fine paper production, but I notice that "the truth remains the truth." The advocates of colossal beating engines, too, who imagined that the dimensions of the beating engine must keep pace with the size of the paper machine, have by experience been taught otherwise.

I find also that the conclusions reached by another in regard to the expenditure of power are very much to the point. There are plenty of people who have been enthusiastic over the rapidity of the grinding with two cylinders in a single beating engine trough, or over very broad beating engine cylinders, and who have astonished the world with the most glowing testimonials as to their capacity. It was the same with beating engines having bedplate-raising and pulp raising arrangements.

The enthusiasm, however, only lasted until an accurate indicator-reading of the steam engine was made, or until the good water supply ended. The beating engine craze at one time went so far that every construction, no matter how involved, was lauded as an important step in advance in speed of stuff density of pulp, quick grinding, even as economy of power.

If, for example, we could combine in one system all the various steam boiler systems for which economy of coal is claimed, and place in operation with this all the inventions aimed at economy in steam, such as automatic stokers, grate construction, installation of economizers, steam superheaters, etc., a modern steam plant would be a coal producing and not a coal consuming institution. It would eventually be the same with the beating engine systems; they would become sources of power in place of being consumers.

The beating engine is just an educational example of the idea of work, namely, power multiplied by distance. Modern technique may affect economy in one or both factors, but "from nothing," in spite of every form of construction, "nothing can be made." Where the saving of labor appears most impressive is in the concentrating conditions, because the water like the pulp must be moved, whereas the pulp-mass, supposing we have cellulose in view, has only a specific gravity of 1.52. The loading substances and other additions, of course, increase the average specific gravity of what we generally understand as paper-pulp. If we start with the old, ordinary beating engine, all the modern and the most modern forms of construction have produced nothing unique or epochmaking, excepting that in the original model the gross technological errors in regard to the form of the tub, the fall conditions and dead propulsion of the pulp have been remedied or removed. By this I mean that we can designate as unique only a total change and of course this accompanied by an improvement in working, such as the long past change from the stamp mill to the grinding system. The entire system of different finishing machines, for instance, has come to grief and the system of a variety of pulp mills receives but little more attention. This negative progress from the unclear form of the beating engine is only evidence that the original ideal embodied the greatest vital efficiency. That which came and was maintained, applied only to improvements in the above respect, in form, proportion of fall, etc.

In fine paper production, limits are even set to pulp concentration, because too great a pulp density is attended with too great a greasiness of the wholestuff, and this is desired and advantageous in but few fine papers. We must then decide to curtail the present normal production, which should be dictated to a great extent by the current market prices. This, however, would put us outside of competition.

In modern fine papers there is demanded, in addition to a certain intrinsic excellence, to even a greater extent exterior elegance, and most of all, uniformity. The labor applies especially to such papers as are intended to be worked or further perfected by any printing process or with the aid of paper goods manufacturing machines.

Woodpulp for Explosives

FOLLOWING up the correspondence in the *Daily Chronicle* as to whether Germany can use woodpulp in place of cotton in the manufacture of explosives, Clayton Beadle, the widely known cellulose chemist of London, contributes the following, which is reprinted from the *World's Paper Trade Review*:

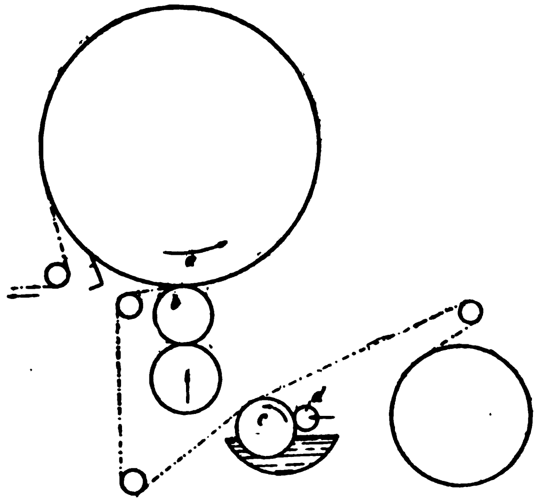
My experience points to the extreme difficulty of substituting woodpulp for cotton. Certainly opinions are very much divided among chemists who have made this a special study. Within a few weeks of the outbreak of the war I was in Germany testing consignments of woodpulp from different sources for the manufacture of artificial silk where a high degree of purity is required. It was impossible to find any woodpulp manufactured in the German Empire that would answer the purpose. It all had to be obtained from outside sources, and every consignment had to be subjected to minute chemical analysis and passed before it left the pulp works. The degree of purity, however, required for the manufacture of artificial silk by the cuprammonium or nitrocellulose process is not so great as that required for explosive purposes, and a certain degree of variation can be rectified in the process of manufacture in the former case.

Count de Chardonnet may have succeeded in producing a nitrocellulose from woodpulp suitable for artificial silk in the same way as we have succeeded in making artificial silk from woodpulp by the cuprammonium process, but the years of labor we have had in this direction only show the extreme difficulties to be encountered. When I last visited the large Frankfurt works making nitrocellulose for artificial silk they used nothing but cotton, and the same I found to be the case when I visited the works at Besancon established by Count de Chardonnet.

If there had not been material difficulties in the way of the use of woodpulp in these industries, woodpulp would have been used long ago. The difficulties are increased tenfold when it comes to the question of explosives. Even if industrial success is achieved on a small scale, it is useless to a nation unless it can find sufficient supplies on a gigantic scale to take the place of cotton.

As the paper is finally dried on the finishing roll, and if it is to retain its finish, must pass on to the roll containing a certain amount of water, so that the fibers are still pliable to receive the finish of the rolls, the finishing roll must be of the largest possible diameter. For this reason efficient machines have been constructed with cast iron cylinders up to 3,200 millimeters diameter [126 inches], the largest measurement allowed by railroad transportation regulations.

Especially in the production of thicker paper and card, to facilitate working at high speed, four to twenty and more drying rolls are disposed ahead of the finishing roll, because otherwise the card, at the high rate of speed, will not be dry. This has, it is true, insured high efficiency in paper and card machines, but in one-side finish left much to be desired, because the side of the paper which was to be finished, after passing over the many drying cylinders, was dried to such an extent that the fibers were too brittle and consequently did not lie close to the surface of the polished finishing roll.



DEVICE FOR FINISHING PAPER ON ONE SIDE

By a device for the production on paper or card machines of one-side finished paper or card, on which the firm of J. M. Voith, of Heidenheim-on-the-Brenz, have been granted German letters patent No. 287,829, class 55e, dating from July 30, 1913, this disadvantage is overcome, by uniformly moistening the side of the paper sheet that is to be finished and consequently is to be forced by the pressing roll *b*, against the finishing roll *a*. By this moistening, the softness and pliability of the fibers are restored, the moisture however penetrates but slightly into the paper or card so that on the finishing roll the paper is perfectly dried and is given a fine, smooth polish.

The moistening may be accomplished by well known methods, such as spraying pipes, brush moisteners, or moistening cylinders, or, as shown in the accompanying illustration, by passing over a roll, the lower part of which is immersed in a water bath. To insure even distribution of the water and to control the amount of water to be carried on to the paper, a roll *d* is provided, which is pressed against the moistening roll on the side that leaves the water bath. Either or both rolls can be covered with felt on rubber.

Paper mills in India find it very difficult to check the growth of imports of paper, etc., into that country, although during the last few years active steps have been taken to develop local supplies of raw materials.

Paper from Sugar Cane Fiber

An invention, patented in the United States on August 24, 1915, by W. A. R. M. McRae, of London, England, provides certain new and useful improvements in the production of halfstuff paperpulp or paper, of which the following is a specification:

This invention relates to improvements in the production of paper and has particular reference to the production of papermakers' halfstuff or paperpulp from megass or other like canes.

According to this invention a process for the treatment of megass or like canes for the production of the material referred to above consists in treating previously crushed raw material by boiling or cooking it with a solution of water containing lime only, washing the treated material and subsequently disintegrating the washed product.

All plant substances consist of a mixture of cellulose and noncellulose compounds more or less cemented together, the latter serving as the binding complex; and the primary function of the chemical treatment is to separate these constituents in order that the cellulose may be rendered available for the manufacture of paper. Lime, known as an alkaline earth, serves admirably for this purpose as though alkalies like caustic soda and potash, namely hydrates of soda and potash, or the carbonates of these elements, hydrolysis of the noncellulose compounds takes place. In the case of the latter, the hydrolysis is much more drastic owing to their complete solubility in water; over 50 percent for the hydrates and about 17 percent for the carbonates, whereas in the case of caustic lime, the solubility is only about 0.13 percent, and it is only when this amount in solution is neutralized by the acid (*e. g.* acetic acid) products formed as the result of hydrolysis, that a fresh quantity of the undissolved lime can pass into solution to again act upon the fiber substance and continue the action.

It is thus clearly seen that by the lime process the resolving action is more restrained, and progressive, and consequently the degrading action is much less. This is clearly illustrated by the relatively pale colored compounds formed by the breakdown of the noncellulose compounds, when boiled with lime, as compared to the dark, in point of fact almost black, colored compounds when alkalies are used, especially when boiled under pressure.

The boiling or cooking operation takes place in the presence of steam under pressure.

Further features of the invention will be more clearly understood from the following description which is that of a preferred method of carrying the invention into effect.

Megass is usually received direct from the sugar-mill where it has been largely broken up, but in the case of canes not in this condition they should be crushed or broken up to render them more permeable to fluid, either liquid or gas. In this condition they are then boiled with live steam under pressure with milk of lime in digesters or boilers of any well known type commonly employed in the treatment of other substances for the production of paperpulp or the like. The time of boiling varies from 4 to 16 hours and depends, as will be readily understood, upon the pressure of the steam, the grade of material, the type of digester, quantity of lime, and the class or quality of the resultant paper to be produced. The pressure employed may vary between 40 lb. and about 100 lb. per square inch.

It is preferable to pass the lime in the form of milk of lime through a sieve, which may conveniently be wire gauze, before running it into the digester. The quantity of lime used may vary preferably from 5 to 25 percent by weight of the dry weight of the raw material before it is placed in the digester, although the actual quantity employed will vary in accordance with the features referred to above in connection with the time necessary for the boiling operation.

After the cooking operation, the product is preferably allowed to mellow. The subsequent action of "mellowing" after the boiling operation is a very important one. As mentioned previously caustic lime is only very slightly soluble in water, and, as is well known, bacterial action is very active when soluble organic compounds containing traces of nitrogenous matter are on the slightly alkaline side. Such a condition of things where fermentative action is most pronounced, is easily obtained, because free lime, if present in such a proportion as to restrain fermentation, would combine with the carbonic acid in the atmosphere, to form an inert compound, namely, chalk. Here again, when once fermentation sets in, the action is a progressive one, the noncellulose compounds being first to respond to such treatment and forming lime salts by the combination of lime with organic acids formed as a result of this action. These are removed by subsequent washing.

Care must, of course, be used because the cellulose itself can be attacked to form degraded products. If caustic, or carbonates of alkali were used, however, the excess of the alkali which would naturally be present in the liquor, would in most cases be quite sufficient to act as an inhibitor to the growth of bacteria, hence the fermentation action would be *nil.*

The stock thus produced is next treated in a potcher and washed therein with water, the circulation and motion of the contents of the potcher being maintained by a paddle-wheel disposed therein or by a centrifugal stuff-pump or other means. This washing operation must be completed before further treatment of the material, as it is necessary to remove the pithy and mucilaginous substance originally forming the portion of the core of the cane.

With regard to a paper containing pith, it is quite true that a good paper can be made containing a small proportion of parenchyma tissue, of which the pith is composed, but the use of such a material would render the paper unworkable on the machine. Pith is not a true normal cellulose, but is a mixture of beta and gamma celluloses, and such celluloses have the property of hydrating, that is, combining with water to such an extent as to render the pulp mixture almost like mucilage. It is clear, therefore, that in the production of a paper in which for commercial purposes, rapid separation of water should take place, such a condition of things would be impossible. Furthermore, megass contains a large proportion of silica. In the use of caustic alkali under pressure, this silica may form an alkali silicate, which adds to the brittleness of the product when dry and also increases its refractory qualities when in the kollergang making the mass viscous, foamy and sluggish. Lime will not unite with silica under conditions of the present case and the silica is accordingly readily eliminated. The washing operation also removes other matter and it is found that unless such impurities are removed before the step next to be described, they are retained permanently in the material and are found to be largely detrimental to the production of a satisfactory stock.

After sufficient treatment in the potcher the excess water is expressed, extracted or drained away in any suitable manner. The partially dried stock after the water has been removed is then transferred to a kollergang or edge runner to be disintegrated. The treatment in the kollergang may last approximately from ½ to 1 hour, according to the degree of disintegration required. The resultant material is then in the form of papermakers' halfstuff from which it may be converted by the well known means into paperpulp or paper.

If desired, the halfstuff produced from any of the materials may be used separately for the production of paper or may be combined in any proportions or with any proportions or with other papermaking material according to the quality of paper which it is required to produce.

In cases where the pithy or mucilaginous substance has been in part removed from megass or the like canes by a process prior to the treatment of the cane for the production of halfstuff, paper pulp or paper the remaining fibrous material may equally well be treated by the present process.

Phenol Compounds of Waste Sulphite Liquor

IN the specifications of a patent issued to Ora Willis Knight, deceased, by Minnie G. Knight, executrix, of Portland, Me., for a process of treating sulphite waste liquor and product thereof, certain novelties are to be found. The claims cover a condensation product of a lignone derivative and a phenol, besides other reactions of phenols and aldehydes.

According to the patented process the waste sulphite liquor may be treated in its natural condition, as blown from the digesters, or it may be more or less diluted with wash water, and it may be more or less concentrated, but preferably the liquor is treated after it has been submitted to a treatment for the removal of all or a portion of its crystallizable and fermentable saccharine matter, either by fermentation or some other method. If fermented, the alcohol produced may be first distilled off, and recovered.

In the manufacture of woodpulp, the wood is generally boiled with a solution of calcium bisulphite, or magnesium bisulphite, or a mixture of these materials, under pressure, and about half the weight of the wood goes into solution, as complex dissolved organic matters, said to consist, at least in part, of calcium lignone sulphonate, of more or less unknown composition. The waste liquor is known to contain some fermentable sugars. This liquor is preferably concentrated, and fermented, and the alcohol distilled off, and then is in the form best suited for treatment in accordance with the present invention.

During the preliminary treatment the liquor should be neutralized, or nearly so, with lime, magnesia, or equivalent. This liquor, so treated may then be treated with a phenol such as ordinary phenol (C_6H_5OH) or a cresol, or mixtures containing one or more such bodies, such as creosote oil, and heated therewith, either at atmospheric pressure, or a higher pressure, to produce a condensation product. During this step, condensing agents, such as acids, alkalis, salts, are added (in particular the following agents give good results: hydrochloric acid, 3 to 10%, caustic soda, 2 to 4%, caustic potash, 2 to 5%; sodium thiosulphate, 6 to 10%; potassium dichromate, 8%; lime 3 to 5%; zinc chloride, 2 to 4%; instead of the latter, the equivalent amount of hydrochloric acid and zinc may be used, giving whiter and purer products; and ammonium carbonate, 2 to 4%).

The amounts stated are based on the weight of

Continued on page 32

The Color Situation

WITH the manufacturers of those grades of paper which require coloring the question of obtaining an ample supply of colors is becoming a very serious one.

As is well known, we have in the past depended mainly upon the importation of our chemicals from the countries now engaged in war, and particularly from Germany and Austria, which are in no position to send us these articles even if they have them to send.

From different sources announcement has repeatedly come that the problem is being solved by American chemists, and that we will shortly be in a position to supply our own requirements, thus leaving us independent of the European market. Whether this is correct we are unable to state, but sincerely hope that in the near future at least a solution will be worked out.

There is no physical reason why we should not manufacture our own dyes. If we are correctly informed, the materials from which they are made are to be had here in abundance, and there is no doubt that American skill, if properly applied, can do anything that can be done elsewhere. The trouble in the past has been that no one has cared to invest money in any such enterprise for the simple reason that we could not possibly produce these articles profitably at the price for which the foreign product was being sold. It was simply a question of business.

Now, to be sure, the price commanded would be attractive to a domestic manufacturer, but no one can immediately begin local production, because it requires times to properly equip a plant, admitting that the materials and processes are available. The immediate requirement cannot, therefore, be met by any possible American production.

Moreover, there is a feeling among those who would be inclined to invest money in such enterprise that it would be a hazardous undertaking. Though for the present and perhaps for some little time in the future the market would absorb the output of domestic manufactures at a price which would yield a profit, no one can say because no one knows what will happen when the war is ended. There is a general feeling that when peace is restored European countries will be so eager to obtain the American dollars, which they will sorely need, that their goods will be hurriedly sent into this country and disposed of at prices which could not possibly be met by our own producers. That being the case, it is perfectly natural that men are not eager to enter into a business which promises nothing for the future.

We sincerely hope, however, that preparations will be made for the domestic manufacture of these articles, and that the Government will have the wisdom to observe the necessity for the encouragement of the industry.

In the early history of this country it was agreed by all that what we then called our infant industries should be protected. Many now insist that generally speaking American industries are no longer infants, but are able to take care of themselves. Whatever may be true of other lines of manufacture, it must nevertheless be admitted that any industry we may have in the near future in America established for the manufacture of dyes must be newly born and must be an infant in the industrial family without regard to how many mature brothers and sisters it may have.

There is no reason why the baby should not be properly nursed and cared for, although the other children have grown up. Therefore, if the policy upon which we were all once agreed that the infant industry deserved protection is correct, we sincerely owe it to this belated arrival to accord it the same chance to grow up that was given to the other children.

Whatever, therefore, may be our political convictions, and whatever may be our policy concerning other lines of manufacture, ample protection should be afforded the manufacturer of dyes whereby capital may be encouraged to engage in such enterprise and secure us hereafter against such emergencies as have recently arisen.

The European Loan

WE have at the present time among us the financial representatives of European countries who are seeking to obtain a loan from the American banks. Whether they may be successful in part or in whole remains to be seen.

Many questions have arisen as to the propriety of making such loan, as well as to the business policy. Some contend that as a neutral nation we are not justified in lending financial assistance to any of the contestants; and very many insist that the risk is too hazardous to justify in making the loan.

We do not pretend to be sufficiently advised to answer or even discuss the merits of these suggestions. There is, however, one commercial consideration which cannot be readily dismissed. America is deeply interested in the finances of foreign countries, as they are in our own affairs. In addition to that the industrial activity of this country, and to the same extent its prosperity, depends upon the volume of our foreign commerce. Anything, therefore, that we may be able to do which will increase the purchasing power of any one or more of the European nations just to that extent broadens the market for American goods and enlarges the opportunity of the American producer.

It is not possible to deal with people who have neither money nor credit; and it is generally believed that any loan which might be made in response to the present demand would simply provide a fund that would almost immediately be spent in the purchase of supplies manufactured in the United States.

If, therefore, such loan can be honorably made and can be made with comparative safety, it is very greatly to the interest of the American people that foreign countries should be in a position which would enable them to buy our wares and to keep our mills going.

Status of Dye Manufacture Set Forth

Dr. Norton Speaks of the Crisis Faced by Dye-Using Industries—Situation Analysed

Dr. Thomas H. Norton, the Government investigator, has found it necessary to deny that he had given any indorsement of the processes or future of the manufacture of colors by the Pearsite Company, holder of the new cannel coal process. John Lindemann, a representative of F. Bredt & Company, who will handle the Pearsite colors, is extremely optimistic regarding the adaptability of the dyes being manufactured at Cannel City, Ky., by the Pearsite process, to the textile industry, and it is assumed to the paper industry as well.

MR. LINDEMANN IS TO SHOW NEW DYES

In a talk with a representative of PAPER, Mr. Lindemann said he would be in a position to exhibit samples of blue, red, black and green anilines at the meeting of the Technical Section of the American Paper and Pulp Association on Thursday of this week. "We expect," he said, "to receive the first shipment from the plant at the end of next week. After that the output is expected to grow daily so that by the middle of November the factory will turn out 10,000 pounds of colors a day. The capacity will be about 5,000 pounds a week until the middle of next month. Later, when running full, the output will be 40,000 pounds daily."

It was stated that as the Pearsite Company produced dyes from its own raw material it would not be handicapped by the difficulties under which many old-process concerns labor. Mr. Lindemann said that the agents were filing applications of mills for the new colors in the order received.

According to Dr. Norton, the Pearsite colors are built up from waste products of petroleum.

In discussing the relative costs of production by the ordinary method of obtaining benzol and toluol, and by Dr. Rittman's method, which involves the employment of petroleum by-products, Dr. Norton said that no definite cost could be attached to the latter. In Dr. Rittman's method there is a distinct cost of production, due to the fact that the value of the by-products used is known. Dr. Norton asserted that the new process was a national asset, in that it would prevent complete monoply of either the gasoline or benzol industries.

FOREST PRODUCTS LABORATORY EXHIBITS OSAGE ORANGE

The first demonstration of the new osage orange dye discovered at the Government laboratories in Madison, Wis., was made at the Exposition of Chemical Industries this week. This dye is purer and more uniform than fustic, which varies, as it is brought from Jamaica or Mexico, but does not possess the fastness of logwood.

CRISIS FACED BY DYE-USING INDUSTRIES

After a conference with the head of one of the largest silk dyeing concerns in the country, Dr. Norton made a statement, which for the first time since the embargo on German dyestuffs became acute, reveals in detail the serious condition confronting the dye-using industries of the United States. In this conference it was shown that consumers are able to obtain only small odd lots of such standard colors as azo-yellow, orange, chrysoidine, fast red and induline, of domestic manufacture.

The crisis faced by the silk industry, to mention a source of consumption that is feeling the dye scarcity most acutely, was described by Dr. Norton as follows:

"In a few days, on account of the great demand for dark blues, stocks of the following colors will be completely exhausted: Victoria blue B, methyl violet, patent blue, and brilliant green. The officers of the great dyeing company in question desire to impress upon the producers the importance of taking up the manufacture of these four colors at the earliest possible date.

"Such colors as methylene blue, alizarine red SX, developed blacks and their developers, as well as the alizarine and vat colors in general, seem to have completely disappeared from the market, with exceptions scarcely worthy of note."

The dyestuff crisis was also emphasized by D. F. Waters, president of the Master Dyers' Association, of Philadelphia.

"It seems to be absolutely impossible to convince the Secretary of Commerce Redfield that the American dye industry is actually on its back because of the shortage of dyes," said Mr. Waters. "We have explained all of this to the secretary, but for some reason or other he will not be convinced. We know that in time the United States will produce its own dyes, but this development will take about ten years. What we are concerned about is the immediate supply that must come from Germany, and that cannot come from anywhere else."

Whether the dyes which the Pearsite Company will be able to furnish shall meet with favor is a problem that only actual production must show. But, whether they are a success or not, it is reasonably certain that the other dye-makers now at work will shortly be able to supply many of the requirements of the domestic market. It takes time, however, to develop so intricate a trade as the manufacture of delicate dyes.

THE UNITED STATES MUST MAKE A BEGINNING

According to Dr. I. V. Stanley Stanislaus, of Philadelphia, it will take the United States from ten to twenty years to reach the point that Germany has gained in the manufacture of dyestuffs, but he contended that however long it took, the beginning must be made, and the psychological moment for the beginning had arrived.

In an address before the National Association of Manufacturers at New London, Conn., on September 11, Dr. Stanislaus analyzed the situation and showed that in 1913 the total consumption of artificial dyestuffs in the world had attained a value of over $92,000,000. Germany furnished 74 percent of the entire amount and more than half of the materials needed to make the remainder. The only country, in addition to Germany, manufacturing dyestuffs in any noteworthy manner for the world's markets is Switzerland. That country relies, however, for its crude and half-manufactured materials chiefly upon German sources. The dominance of Germany in the dyestuff production and commerce of the entire world is so marked, and inherently of such potential might, that it does not hesitate to make itself felt whenever and wherever an effort is made toward emancipation from its control. The methods used are those often associated with the working of great industrial corporations in various lands and now effectively checked by legal enactment in the United States. In the case of the German coal-tar chemical industry, the field is international and its operations are unchecked by law. Its influence has been felt at once in our own country when efforts to manufacture intermediate compounds or finished dyes threatened in any way the interests of the German production and trade.

IMPORTS FROM GERMANY SINCE THE WAR STARTED

In the course of his address Dr. Stanislaus said:

"It is estimated that at least 3,000 tons a month of various colors have been received monthly from Germany since the war started, and that has, in a measure, kept the mills supplied with the dyestuffs. If our mills were busy and were running full, this quantity of dyestuffs would hardly amount to two-thirds of the required amount to keep the mills running.

"These are the figures that were transmitted to Mr. Tumulty, the secretary of the President, by Herman A. Metz, of New York, and from a very close observation the figures are about correct. There is an abundance of American raw material, and in one more month we shall have in this country more of the crude elements for the manufacture of dyes than Germany commands at the present day, though that country has for fifty years, as stated before, striven to systematize and increase its output annually.

RESOURCES OF THE UNITED STATES

"In the United States the supply of coal tar is ample, sufficient to provide in abundance all of the crudes required for the manufacture of the dyestuffs consumed in the country. The amount of valuable by-products not yet recovered in our

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If you already know about its SUPERIORITY over various Talcs produced in this country —how it saves money for its user by its FREEDOM FROM GRIT AND MICA—GREATER RETENTION—etc.—

If you could see the extreme care we exercise in endeavoring to make our product the BEST on the market—how we are very particular to have the Pure Rock furnished by our mines ground and prepared in such manner that when our customers receive it they get a SELECT CLASS OF GOODS—

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Economy in the manufactured sheet is the characteristic which insures its welcome into hundreds of paper mills TODAY!

If you want to know more about TALCLAY—desire a sample of finished product, also one of crude TALCLAY rock—desire to know who uses this material and what they say about it, a postal or letter will receive prompt attention and the required information. We'll even send you a quantity for trial—FREE OF ANY CHARGE—if you wish. May we?

I-N-V-E-S-T-I-G-A-T-E

The St. Lawrence Talc Co., Inc.

P. O. Box 171 **Natural Bridge, N. Y.**

present coking plants amounts to $75,000,000 annually. With adequate provision to save all the benzol and tar liberated in American coke ovens, enough of the ten crudes could be secured to more than cover the world's consumption in making artificial dyestuffs.

"One of the managers of the largest chemical works in this country stated that the question of supplying sufficient quantity of intermediates in this country is one simply of demand and supply.

"If a commercial demand is present American tar works can quickly provide all the crudes needed, practically as cheaply as in Europe.

"He further stated that in three months from now every steel company in this country, and every coke company in this country, will be producing intermediates. In the manufacture of intermediates the production is restricted to four or five compounds, and these cover about one-quarter of the needs of American color works.

"Our manufacture of heavy chemicals is well developed, able to expand rapidly and supply all needed chemicals for the production of intermediates and their transformation into finished dyes.

"The four establishments devoted to the production of dyes supply nearly 100 different colors, largely, however, as already stated, by 'assembling' nearly finished products of foreign origin. These American firms are bold and enterprising, commanding about $3,000,000 capital, evidently doing the best they can under existing conditions to build up a national industry.

ORGANIZATION OF THE GERMAN COLOR INDUSTRY

"Investigation shows that their advance, beyond certain limits in the manufacture of either intermediates or finished dyes, is persistently checked and prevented by the united action of German producers in underselling. The entire German color industry is so completely organized and accustomed to act as a unit in furthering the general interests, at home and abroad, that little success in facing their determined opposition has heretofore been obtained.

"The present crisis has evoked deep interest on the part of all concerned—tar distillers, manufacturers of chemicals, manufacturers of dyestuffs, the many users of the same, and American economists in general—as to how the problem can be settled. There is no question but that our coke interests are ready to multiply their recovery plants for the production of benzol and tar, if a permanent market is assured. There is no question of the readiness of tar distillers to enlarge their plants for the production of an ample supply of the needed crudes if a continued demand is certain. American chemical works and American manufacturers of dyestuffs are ready to embark capital and experience in building up a distinctly American coal-tar chemical industry, using entirely American crudes and intermediates, provided there is adequate legislative prohibition against both 'dumping' or unfair restraint of American trade by the arbitrary action of foreign monopoly permitted by foreign law and not as yet forbidden by our own."

Flood Water Everywhere in Wisconsin

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 21—Since September 9 Appleton has been treated to 7.62 inches of rain, and it looks now as if more was coming. This is more rain than came down during the three months of June, July and August. Appleton has been no exception to the rule hereabouts, either. One result is that the streams have almost been jumping out of their banks, and Lake Winnebago has come up with a rush from a very low point to a point of normal height. Doubtless it will go higher. Naturally recent restrictions upon the use of water for power have been withdrawn.

Along the Wisconsin river district, according to best reports, while there has been plenty of rain, there has not been quite so much as in the Fox river district. If there had been, the conditions there would be something like those of flood times. However, there is plenty of water for power now all over Wisconsin, and the ground is so thoroughly soaked that water will be coming out gradually for a long time to come, thus maintaining good waterpower conditions.

Opportunities In Special Wrapping Papers

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 21—Readers of this correspondence will remember that it has been a favorite contention of the writer that the field of opportunity for utilizing paper in substitution for other materials, particularly wood, has hardly been scratched, and that it still offers rich chances for profit to men of initiative and perhaps of somewhat inventive turn of mind.

An interview that your correspondent had today with Manager Pomeroy of the Pomeroy Paper Manufacturing Company, of Menasha, leads him to believe that other opportunities of like attractive character are open even along prosaic lines in the regular paper jobbing business. The particular department of the paper jobbing business under discussion was that pertaining to wrapping paper, along which line the Pomeroy people just at present are making special exertions.

Mr. Pomeroy showed your correspondent some samples of wrapping paper sent to him at his request by a friend travelling abroad. These samples came from England, Scotland and Germany, being samples of such paper as is used in those countries by the best retail stores. In every case these samples showed paper that was vastly more attractive than the wrapping papers used by any similar stores in America. In most cases these papers were lighter and stronger than similar American papers, and bore in some new fashion of marking the names of the firms using it. It was not crudely printed as used to be popular in America, but showed the firm names in different ways, such as in watermarking, in some sort of oil printing, and in one case in uninked embossing of most attractive character.

It would seem as though such papers as these bearing a firm name unobtrusively and yet artistically would be so tempting as to sell on sight to the better class of retail stores, and it may be said parenthetically that the Pomeroy people, as might be inferred, are going into this line as a special feature of their business, and have already produced some extremely attractive papers. But the point your correspondent especially wishes to bring out is that there are still opportunities for enterprising paper jobbers to build up trade by being more progressive than they are and using their brains. As a general thing the jobbing business is content to go along on the line of least resistance, just as it has been doing for years past. It is willing to go on supplying its customers with old-fashioned, crude, heavy wrapping paper (for example) so long as those customers will take it. It is subservient to the "tonnage" fetich, and looks with horror upon lightweight papers. It has no interest in making wrapping paper more attractive by printing or decoration. Then some day a different kind of a jobber comes along to the customers of such a jobbing business, shows them that lighter, stronger, more attractive papers will do the work better, at no greater price (or perhaps a less price), and walks off with the business. Then there is wailing and gnashing of teeth, and talk of "unprofessional practices" in the jobbing houses that have lost the business, through their own fault in pursuing the easy-going policy of *laissez faire*.

John Shartle's Death Causes Sorrow

[SPECIAL TO PAPER]

DAYTON, Ohio, Sept. 21—The announcement of the death in Buffalo last week of John Shartle, formerly a resident of Middletown, was a severe shock to his friends throughout the Miami valley. Mr. Shartle had been ailing for several months but it had not been known here that he was in a serious condition. He leaves a widow and three daughters but is also survived by five brothers and a sister. C. W. Shartle and Daniel Shartle, of Middletown, are brothers of the deceased, who up to about fifteen years ago was one of the most prominent paper manufacturers in the Miami valley district. He had large paper mill interests in Buffalo and other parts of New York State. He was one of the most widely known paper manufacturers in this section of the country before moving to New York.

Technical Problems To Be Solved

A prize competition has been instituted by the Technical Section of the American Paper and Pulp Association for papers or monographs dealing with the solution of the following technical problems:

(1) The various causes for the deterioration of the Fourdrinier wires and steps to be taken in the prolongation of the life of the wires.

(2) How can the pitch in sulphite pulp be eliminated?

(3) The effect of the order and time of adding alum, rosin and color on the retention of color.

(4) The retention of the various mineral fillers used in papermaking and their effect on the life of the machine clothing and the quality of the paper.

Four prizes of $100 each will be paid for the best paper submitted on each of the slated subjects.

For further particulars apply to the secretary of the Technical Section of the American Paper and Pulp Association, Thomas J. Keenan, 117 East 24th street, New York.

Findings of Commission in Strike Inquiry

President Gould of the St. Regis Mill is Pleased, but Disagrees on Some Points

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 21—The findings of the New York State Industrial Commission in regard to the cause of the recent strike at the mills of the St. Regis Paper Company, at Deferiet; Remington Paper and Power Company, at Norwood, Norfolk and Raymondville; Donnacona Paper Company, at Donnacona, Que.; West End Paper Company and Champion Paper Company, at Carthage, and Continental Paper Bag Company, of this city, were received in this city Friday by the owners of these mills and also by Vice President George J. Schneider, of the International Brotherhood of Paper Makers, representing the strikers.

These findings are based upon the public hearing held here week before last for the purpose of investigating the cause of the recent strike. The commission has no authority to compel either side to accept the recommendations made in its report, which in brief are that the settlement agreement of August 16, terminating the first strike, was just to both parties and that this agreement should again be put into force, ending the present strike. This, however, will not be done by the manufacturers, as indicated by G. H. P. Gould, of the St. Regis and Donnacona companies, who stated that while he was only speaking for himself, he believed that the other manufacturers were of the same mind and he proposed to run his mills as strictly nonunion mills.

FINDINGS OF THE STATE INDUSTRIAL COMMISSION

The report of the commission follows:

NEW YORK, Sept. 16, 1915

"The State Industrial Commission has considered the testimony taken at its public investigation into the causes of the strike in the paper mills in the vicinity of Watertown, held by the entire commission in person, on September 8, 9, and 10, 1915, and presents the following report:

"The strike began on September 2, 1915, and affected the following mills: St. Regis Paper Company, at Deferiet, N. Y.; the Remington Paper and Power Company, at Norwood, Norfolk and Raymondville, N .Y.; the West End Paper Company and Champion Paper Company at Carthage, N. Y.; the Continental Paper Bag Company, at Watertown, and the Donnacona mill in Canada.

"The employees in these mills, who were members of the International Brotherhood of Paper Makers, and Pulp, Sulphite and Paper Mill Workers, had been on strike since May 8, 1915, but after some fourteen weeks, their differences were composed through the mediation of the State Industrial Commission on August 15, and the strike was terminated in all the mills.

"The present strike occurred after work had been resumed little more than two weeks, on account of alleged disregard of terms of the agreement by which the first strike was adjusted.

"The investigation was authorized by the statute and was deemed to be necessary, both because the Industrial Commission was a party to the settlement of the first strike and was pledged by the agreement to inquire into any alleged violation of the promises made by either party, and because this important industry had, for so long a time, been hampered by the strike, resulting in the calling out of the State militia to prevent disorder at Deferiet.

"By general agreement the inquiry was limited to an investigation of the direct causes of the present strike. The testimony only included the history of the negotiations by which the first strike was settled and the conduct of both parties between the dates of August 16, when the strike was declared off, and September 2, when the strike was renewed.

"Only incidental reference was made to disorders attending the renewal of the strike, and to the causes of the original agreement.

"The agreement of August 13, which was ratified by the workers in their local unions on August 15, was reached after several joint conferences between L. B. Steward, general manager of the St. Regis Paper Company, H. J. Cadwell, general manager of the Champion Paper Company, M. S. Wilder, general manager of the Remington Paper and Power Company, representing the manufacturers; George J. Schneider, vice president of the International Brotherhood of Paper-Makers; James H. Malin, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, representing the workmen, and Hon. Louis Wiard, commissioner, and William C. Rogers, deputy commissioner, representing the State Industrial Commission.

The general charge by the managers that the union members violated the spirit of the agreement by discrimination against nonunion men who remained at work is not sustained by the evidence. It appears that proper instructions to treat strikebreakers without discrimination were given by the international officers, and when complaint was made to them that there was still some feeling shown, they went through the mill most seriously affected and insisted that such conduct must cease. Certain men held by the management to be guilty of discrimination were discharged.

"Charges by the men that the management did not live up to their agreement may be summarized as follows:

"1. That outside help was engaged to fill vacancies after the strike was called off, when the agreement provided that preference was to be given to former employees.

"2. That a so called 'blacklist' of former employees was being circulated.

"3. That former working conditions had not been resumed as agreed, especially as regards three tours of eight hours each, instead of two tours of eleven and thirteen hours, and, in some of the mills, as regards wages.

"4. That armed guards were being maintained by the employers in violation of the agreement that hostilities should cease.

"It is not the purpose of the commission to enter into a minute discussion on the testimony regarding these charges. The managers testified that they had endeavored in good faith to live up to both the spirit and the letter of the agreement.

"Confirming this statement, it appeared that most of the strikers had been reengaged during the last two weeks in August, without anyone being required to surrender his union membership. Each of the managers had, during the same time, met and treated with a committee from the union regarding the reinstatement of his men, and the chairmen of the managers' committee had met the international representatives of the union regarding some of the grievances.

"(1) In regard to the employment of outside help, it was shown that most of the cases complained of were covered by the understanding that men already engaged by the managers should be protected. In other cases it was explained that new men were required, because acceptable men were not available among the strikers.

"(2) In regard to the alleged 'blacklist' it was shown that one employer only had listed the men he was unwilling to have employed in his own mills, at first, but that he was not refusing any of them employment finally, and that none of the other managers had seen the list.

"(3) It was shown regarding the resumption of former working conditions, that some of the mills had been more prompt than others in this respect. Generally, the old working conditions, as to three tours, had been resumed. The only mill which was on two tours at the time of the second strike was all ready to return to the three tour system. Regarding wages, the testimony was insufficient to show that any material or permanent reduction was made.

"(4) It was shown that nearly all the armed guards and deputies had been removed from the mills, although a few watchmen were retained, who carried clubs.

"In general, therefore, the commission finds that there is no evidence that the managers intentionally violated either the

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Portland, Ore.,	New York,	Newark, N. J.,	Providence, R. I.

Agents in all the Principal Cities of the World spirit or letter of the agreement, but, on the contrary, were honorably trying to carry it out according to their several understandings. However, the commission does not exonerate the managers, for refusing, before the second strike, to renew the joint conference, by which the first strike was settled. This was requested and recommended by the representatives of this commission, and the commission believes that such a conference might have resulted in clearing up what is now seen to have been a misunderstanding of the agreement. The commission also regrets that the workmen did not follow its recommendation that more time be allowed to the managers to adjust matters complained of after they had been informed of the nature of the complaints from the several mills.

"The commission finds that the second strike was caused by a general misunderstanding of the exact terms and real intent of the agreement. There was especially a lack of clear understanding by all but one of the managers and practically all of the strikers, of the method of application of the agreement regarding reinstatement and discrimination.

"It was, at the time, thought best that the memorandum supplementing the agreement should not be given out or made public. Subsequent events show that this was a mistake.

"In order that the general understanding reached when the strike was settled might have a fair trial, it was necessary, in addition to its being interpreted in the same terms by both sides, that it should have applied to it both time and patience. It did not have sufficient of either.

"The commission is of the opinion that the agreement was, under the circumstances, essentially just to all parties and, to the end that it may still be carried out, recommends:

"1 That its terms be now definitely restated, reduced to writing, and made the common property of all concerned.

"2 That the present strike be called off, and that the men return to work pursuant to the agreement so reduced in writing.

"3 That all parties proceed under it in good faith and in a broadminded spirit, and

"4 That any differences, which may arise, relative thereto, be submitted to the industrial commission, or any other tribunal which may be mutually satisfactory, with a provision that its decision be final.

"The State Industrial Commission, John Mitchell, chairman; James M. Lynch, W. H. H. Rogers, Edward P. Lyon, Louis Wiard.

"The above report was adopted and ordered filed this 16th day of September, 1915.

"H. D. Sayer, secretary."

STATEMENT BY MR. GOULD

After studying the report of the commission, G. H. P. Gould, president of the St. Regis and Donnacona paper companies, and a member of the committee appointed by the mills of this section to handle the strike situation for the manufacturers, made the following statement:

"In the temporary absence of all the members of the committee appointed by the mills affected by the strike, I give my personal views in relation to the decision as being one very largely affected by the strike.

"I am much gratified by the finding of the commission that the mills substantially kept their agreement on the settlement of the strike. Also the finding that the strikers were hasty in going out on strike on such short notice.

"I cannot agree with the commission that the employers should have again entered into conference with the strikers in view of their conduct just prior to the last strike. The St. Regis Paper Company had between three and four hundred nonunion men employed when the settlement was made. Within two weeks it had less than one hundred, all others having been driven out by persecution, oppression, and discrimination, of nearly three hundred union men taken back.

"I cannot agree with the finding of the commission that the union men taken back lived up to their agreement. While this field of evidence was not developed on the hearing, owing to lack of time, the fact that about three hundred nonunion men left the St. Regis mill in two weeks after we commenced to take back strikers shows how the union men kept their agreement.

"The commission in its desire to maintain industrial peace recommends that we start over again where we were when the strike was first settled. That is impossible. Their conduct at St. Regis alone makes the return of any of the men connected with that movement to the mills of the St. Regis Paper Company impossible. In the riot the union men destroyed property, threatened life and put themselves outside the law. Thirty-six of them have been arrested for crimes committed on the night of the strike. I have so informed the commission in personal conversation and did so at the hearing here. I am therefore at a loss to know what they mean by this recommendation.

"While I cannot speak for my associates in their absence by authority, I feel certain from frequent conferences had with them that the views of all of us are in accord. As I have repeatedly stated since the last strike, the St. Regis mills will hereafter be operated as nonunion mills."

The other members of the manufacturers committee consisted of H. J. Cadwell, of the Champion Paper Company, of Carthage and M. S. Wilder, of the Remington Paper & Power Company, of this city.

MR. SCHNEIDER SPEAKS FOR THE UNION WORKERS

George J. Schneider, vice president of the International Brotherhood of Paper Makers, who has been in charge of the strike situation since the end of the industrial hearing, made the following statement:

"As far as the strikers and the organizations of which they are members are concerned, there will be no conclusion until what we believe is a satisfactory agreement can be arrived at.

"A statement in answer to that of Mr. Gould will be made Monday or Tuesday, regarding the report of the industrial commission. It will be based upon the evidence submitted to the industrial commission.

"The American Federation of Labor, as well as the State Federation of Labor, has already pledged its moral and financial assistance, which will be forthcoming when the strikers call for it. The paper makers and the pulp and sulphite workers in this community have helped so far."

The strike situation is quiet at the St. Regis plant at Deferiet and has been ever since the night the strike was renewed. Nevertheless the sheriff has about fifty deputies guarding the plant in addition to half of Company C, National Guard, the other troops, together with the Naval Reserves, having been withdrawn several days ago. The strikers still have pickets out but no disturbance has been created. The company has been getting men in to take the place of the strikers and the mills are being operated.

Black River.

American Pulp Screens for Europe

[SPECIAL TO PAPER]

Watertown, N. Y., Sept. 21—During the past week ten pulp screens manufactured by the Harmon Machine Company, of this city, have been completed and shipped to Europe. Their destination is Christiania, Norway, and from here they went to New York by rail, there to be placed aboard a steamship bound for the Scandinavian peninsula. The shipment is the first and largest one to be made by the local company for several weeks, for foreign use. The bulk of the business done by the Harmon Machine Company is in Norway, Sweden, Denmark, and Finland, in which countries many screens are sold each year.

Black River.

Veith's Paper Mills Definitely Sold

[SPECIAL TO PAPER]

Marion, Ind., Sept. 21—Savesky Brothers, iron fence post manufacturers, have purchased the large mill buildings and spacious grounds of the defunct Veith's Paper Mill Company with the result that North Marion has gained another substantial industry and will lose one of the most unsightly spots in its confines.

The old mills of the paper company have stood idle for several years and have been allowed to get into a deplorable state of disrepair. A large force of men will begin tearing out the old machinery and improving the buildings and grounds the first of the week.

"TEST SPECIAL"

Rubber Belting

BEST BELT EVER MADE

NEW YORK BELTING & PACKING COMPANY

New York, N. Y.	91-93 Chambers Street	St. Louis, Mo.	218-220 Chestnut Street
Chicago, Ill.	124-126 West Lake Street	San Francisco, Cal.	519 Mission Street
Philadelphia, Pa.	821-823 Arch Street	Spokane, Wash.	157 So. Monroe Street
Pittsburgh, Pa.	420 First Avenue	Boston, Mass.	232 Summer Street

Mrs. Warren's Cousin Killed in France

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 21—Mrs. F. W. Warren, wife of the manager of the Warren Parchment Company, of Dexter, has just received word of the death of a cousin, a soldier in the French army, who was killed in the Argonne region. The young man, Leopold Chevreau, was a private and was but twenty-one years of age. A bomb dropped from a German aeroplane was responsible for his death. That he had been gallant on the field of action was the statement received by his mother in Paris, from the captain of his company, who notified her of her son's death. Mrs. Warren herself is a native of France, being the daughter of Gaston Brunet, a prominent French banker. BLACK RIVER.

Mr. King Organizes the Rex Paper Co.

[SPECIAL TO PAPER]

KALAMAZOO, Mich. Sept. 21—Construction work on the new paper mill being erected by the Rex Paper Company, recently organized in this city with John King as president, is being rapidly pushed by the contractors and it is hoped to have the big structure under roof before severe weather sets in. Much of the concrete work has been finished and the laying of brick walls will be started within the next few days. All of the brick to be used in the new mill has been made in Kalamazoo by the Southern Michigan Brick Company.

Mr. John King, president of the new company, is probably one of the best known men in the paper trade in the Middle West. He organized the King Paper Company and served with that corporation until a few months ago when he resigned as vice president and superintendent to start his new mill. Mr. King will have associated with him his son and a number of other well known paper men of this city.

He hopes to have his new mill in operation by spring and if present indications furnish any proof of his assertion, the mill will surely be running by June. Heavy rains have held up work a trifle during the past few days, but contractors and engineers are preventing delays as much as possible. The new mill will have only one machine on the start and book paper will be manufactured it is stated.

Watervliet Company to Increase Its Capital

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 21—A meeting of the stockholders of the Watervliet Paper Compay, called for today, has been adjourned until September 29, when it is stated that some action will be taken towards increasing the capital stock of the company. President W. M. Loveland has been rapidly increasing the business of the company and he now finds it necessary to enlarge the working capital of the corporation. The next meeting will be watched with considerable interest.

Mr. Milham Back from Vacation

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 21—President Frank H. Milham, of the Bryant Paper Company, has just returned from his annual fall vacation. He spent the past week and a half in the Northwest hunting. Mr. Milham had an excellent time and also good luck. The past few months have been busy ones for him and his vacation was well earned.

Mr. Milham, besides spending a great deal of time at the mill, is also president of the Chamber of Commerce which is just now perfecting plans for a "Prosperity week'" celebration. He also took an active part in the campaign against bonding the city in excess of a million dollars to build a new gas plant and light plant. This battle he won.

Death of Jacob Gumbinsky

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 21—Jacob Gumbinsky, for years one of the best known dealers in old paper stock in this State, died in Chicago last Saturday. He recently went South in order to benefit his health, but returned to Chicago for treatment where he died. For several years past he had been a stockholder in two Kalamazoo paper mills and was well known to practically every paper manufacturer in the Middle West. He was fifty-six years of age. His remains will be brought back here for burial. His son, Oscar Gumbinsky, will conduct the business in the future.

Not Interested In Connecticut Valley Co.

The Mount Tom Sulphite Pulp Company, 50 State street, Boston, through its treasurer, E. R. Rantoul, asks PAPER to correct an erroneous news note published in the preceding issue. The communication follows:

"In your issue of September 15 we note on page 26 under 'News Notes from Holyoke' a statement that the Mount Tom pulp mill was owned by the Connecticut Valley Lumber Company. In the interests of accuracy I would like to say that the Connecticut Valley Lumber Company have no interest whatsoever in the Mount Tom Sulphite Pulp Company, and we are anxious that this impression should not be spread abroad.

"MOUNT TOM SULPHITE PULP COMPANY,
"By E. C. Rantoul,
"Treasurer."

New York Paper Trade Golf Tournament

Invitations are out for the annual fall tournament of the New York Paper Trade Golf Association, to be held at the Hackensack Golf Club, Hackensack, N. J., on Tuesday, Oct. 5, 1915. The following is the schedule of events:

1—Low gross, 36 holes.

2—Best selected score, 18 holes, half handicap.

3—36 hole medal play handicap—prizes to the first and second best net scores.

4—Kickers' handicap, 18 holes, morning round.

5—Four ball medal play handicap, 18 holes, afternoon round—three-quarters of the handicap of the partner with the lower handicap to be allowed—team entries to be received after the morning round.

Entry blanks must be filled out in full and returned to the secretary of the committee, William C. Ridgway, 41 Park Row, New York city, with the entrance fee of $5 not later than September 28.

The entrance fee will include the cost of the luncheon and green fees, and arrangements will be made for dinner at the Club House, at an additional cost of $1.50, providing a sufficient number desire it.

Train leaves Erie station, Jersey City, at 8.25 A.M., to the Prospect Avenue station, Hackensack, arriving at 8.57. Contestants are requested to take this train in order that events may be run off promptly.

With the exception of the low gross prize, all prizes will be merchandise and the winners will be entitled to selection in the following order:

(1) Best net score—36 hole handicap; (2) Best selected score; (3) and (4) Four ball handicap; (5) Second best net score—36 hole handicap; (6) Kickers' handicap. No contestant can take more than one prize.

The committee in charge is composed of B. J. Richardson, A. C. Scrimgeour, A. E. Dubey, F. H. Harrison and W. C. Ridgway.

Prices Shot to Pieces

[SPECIAL TO PAPER]

DAYTON, Ohio, Sept. 21—While local paper and paper box manufacturers are growing more sanguine relative to the future of the industry, they are not wholly satisfied with the results so far achieved. "There are no prices any more," said B. I. Rike, president of the Rike Folding Box Company, a few days ago. "The bottom has fallen entirely out of the market and it is entirely without stability. It is difficult to determine a basis upon which to operate and this condition precludes the possibility of establishing any sort of system. Our business has been generally good. The demand seems to be growing somewhat and other phases of the trade are not entirely disheartening. The price system, or lack of system rather, is certainly deplorable."

WATER
LIQUID SIZE
SOLID MATTER

Why you should use
DRY SIZE

IT IS ECONOMICAL

LIQUID SIZE

Absolutely clean, uniform, and easily soluble, containing 60, 65, 70 and 80 percent dry matter and free rosin, to suit individual requirements. All sizings sold on actual net weights

Shipments direct from rosin field to consumer.

Factory Located in Heart of Rosin Belt.

ECONOMY

Because—

It contains no water on which freight has to be paid.

It does not freeze in winter or leak in summer.

It is absolutely uniform.

It gives the maximum of Sizing efficiency.

It is absolutely free from foreign matter.

It retains more fiber, thereby adding weight to and increasing the strength of the paper.

IT IS THE BEST SIZE IN THE WORLD

NO WASTE
DRY SIZE
ALL SOLID MATTER

NATIONAL ROSIN OIL & SIZE CO.
SAVANNAH, GEORGIA.
New York N.Y.-
Chicago, Ill.-

Phenol Compounds of Waste Sulphite Liquor

Continued from page 18

phenol used, and the weight of phenol is taken as roughly equal to the weight of the total solids in the liquor. When the mixture is thus heated to about the boiling point of water, for about an hour, or preferably to a higher temperature, for a shorter time, under pressure, the mixture separates and gives two layers, the condensation product, and an aqueous layer, and this condensation product, upon further heating, either with or without condensing agents, produces solid condensation products. These latter are generally of a resinous nature, and may be used as substitutes for shellac, in making varnishes, or may be used as rubber substitutes. These products, upon further heating, produce insoluble, plastic bodies, suitable for insulating purposes.

Wood or other porous material may be impregnated with the mixture of waste liquor, phenol and condensing agent, and then heated to produce the condensation. Wood so treated is preserved, and hardened, and is suitable for use in making insulators, and various other articles.

In the case where the sugars of the liquor are first converted into alcohol, it is not necessary to separate the alcohol, but if desired, the alcohol may be converted into aldehyde, and then the phenol and condensing agent added, and then heated, as above to produce the condensation. In this manner, the product will consist of the condensation product of the phenol and lignone compound and the condensation product of aldehyde and phenol. A suitable mode of carrying out this double reaction is as follows, the parts being by weight:

After the fermentation of the sugars to produce alcohol, and without distillation of the alcohol, the percent of alcohol is roughly determined, and a sufficient amount of sodium or potassium dichromate is added to convert the alcohol into acetaldehyde, a small amount of an acid condensing agent added, and the liquor warmed, to produce the aldehyde, and the phenol added. The amount of phenol in this case should be sufficient to combine with the aldehyde and with the lignone compounds of the waste liquor.

In a particular experiment, the inventor used a waste liquor, fermented, and containing 100 grammes of total solids, about 1 gramme of alcohol, 101 grammes of phenol, 8 grammes of $K_2Cr_2O_7$, and produced 140 Grn. of a solid condensation product by heating under some pressure to 120° C, the potassium dichromate acting as the oxidizer to convert the alcohol into the aldehyde, and the chromium salt produced acting as the condensing agent. In other experiments, iron salts have been used as the condensing agent, with good results, especially $FeCl_3$, and $FeSO_4$, and $Fe_2(SO_4)_3$. In case it is not desired to convert the alcohol into aldehyde, the fermented liquor, the phenol, and the condensing agent may be heated, and the alcohol recovered during the condensing step.

During, or before the condensing step, various materials may be added, suitable as diluents of the condensation product, to alter certain of the properties, such materials as nitro-, chloro- or amido compounds of aniline, naphthalene, benzol, tuluol, or anthracene. The products of this treatment have different properties from those produced without these additions.

Classified ads in PAPER are the means of bringing competent paper workers in touch with employers, and employers having vacancies to fill are reminded to use classified ads. See page 50.

From Canada

Sir William Van Horne is Dead

Sir William C. Van Horne, late president of the Laurentide Company, Ltd., Grand' Mère, P. Q., Canada, died in the Royal Victoria Hospital on Saturday, September 11, after an illness of about two weeks' duration.

The former chairman of the Canadian Pacific board had been in failing health for a number of years and on August 22, upon the urgent recommendation of attending doctors, he was removed to the hospital where an operation for abdominal abscess was immediately performed. He rallied and bulletins reported that his condition was satisfactory. Continued improvement was recorded until last Wednesday, when his temperature suddenly began to rise and his appetite failed. He sank slowly until the end.

In his successful business career Sir William rose from the position of a laborer in the railroad yards at Joliet, Ill., to be a master of finance and a leading figure of transcontinental railroad development in Canada. He was the first general manager of the Canadian Pacific Railway and its second president, while throughout the past thirty-three years he has been actively associated with the company's affairs.

In the pulp and paper world Sir William was as well known as he was to railway men. As president of the Laurentide Company he brought that company to its present high state of efficiency. He was always keenly interested in conservation and in the proper utilization of the country's resources and being possessed of more than usual shrewdness and foresight he early placed the Laurentide Company in a position to take full advantage of the possibilities of the country as a pulp and paper producer.

Annual Report of Laurentide Company

[SPECIAL TO PAPER]

MONTREAL, Sept. 21—The annual report of the Laurentide Company, submitted recently, contained much of interest relating to the power development undertaken by the company during the past year. A significant expression in the report deals with the demand. "There seems to be," it says, "a great demand for power from a number of sources, and we are now more enthusiastic regarding the sale of our surplus power than when we asked the shareholders to make the development."

It was stated that the company expected to be delivering power by November 1 when one unit would be put into operation. Two more units would be started on November 15, and six by January 1, 1916. The expected horsepower to be developed was approximately 125,000 and the cost would amount to about $5,500,000, the sum estimated at the outset. Of the total horsepower at least 100,000 would be disposed of to outside concerns.

Regarding the supply of wood, the report stated that they had a very successful drive, and had got down the biggest lot of logs in the history of the company. Between 60 and 70 percent of the wood for 1915 and 1917 has been contracted for from competitors of the company.

The financial statement showed profits for the year amounting to $807,193, as compared with $730,774 last year, while the surlus for 1914 was $211,193, against $134,774 last year, an increase of $76,419.

There has been a good deal of interest in the financing of the new power plant in connection with which a $4,000,000 bond issue was authorized. On this point the report says:

"The bond issue of $4,000,000 referred to in the last annual report has been created, but, in view of a possible re-arrangement of this financial feature, your board deemed it wise for the present to withhold the bonds from sale, a portion of them, however, being in the meantime used as a collateral for advances by the bank.

"That's something I never knew," said a factory manager.

This man with a reputation as an "efficiency expert" was sure that he had stopped every power leak. But after reading our "Story of Some Friction Tests," he realized that he had overlooked the stuffing boxes of the engines.

And he was convinced, as you will be when you read this scientific treatise on rod packings, that sometimes as much as $500.00 worth of coal is wasted, annually, overcoming excessive and unnecessary friction on the rod that could have been prevented by the use of

DANIELS ROD PACKING **P.P.P.** **FOR STEAM, AIR, WATER, AMMONIA**

Reg. U. S. Patent Office

Remember, this is not the usual booklet making extravagant claims for the goods it advertises—**"The Story of Some Friction Tests"** is a most comprehensive and valuable study of the whole subject of rod packing. It is the combined results of the investigations and work of six or eight men—each a specialist in his particular mechanical line.

To the man who pays coal bills or the one responsible for efficient and economical operation of a steam plant, this booklet is invaluable.

The Story of Some Friction Tests

Forty-four pages, illustrated with many drawings, photographs, diagrams, charts, etc. A copy will be sent FREE on request. The supply is limited.

Name ______________________

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Address ______________________

Position ______________________

(PAPER)

QUAKER CITY RUBBER COMPANY

Manufacturers of Mechanical Rubber Goods

PHILADELPHIA	**CHICAGO**	**PITTSBURGH**	**NEW YORK**
629 Market Street	182 West Lake Street	211 Wood Street	207 Fulton Street

THE MARKETS

New York, September 21, 1915.

MECHANICAL PULP

There has been no change in general conditions governing the market for the week under review. Ample rain continues to restrict the demand for groundwood and sales during the week represented scattered small lots only for immediate delivery. Newsprint mills grinding their own pulp have sufficient stock on hand to meet requirements and no improvement is looked for by dealers within the next thirty days. Quotations closed nominally steady at $15.75 to $16.50 f.o.b mills.

DOMESTIC AND FOREIGN CHEMICAL PULP

Prices closed steady with an upward tendency, but the demand lacked animation and no sales of importance could be traced. Offerings by Scandinavian producers were cabled at prices far above the views of prospective purchasers and no business has been done. The demand from Scandinavian mills by European buyers is reported to be in excess of the output of pulp. It is reported that some mills have sold up their production for 1915 delivery. A shortage in pulp supplies is expected at an early date, with possible sharp advances in prices, in view of the belief entertained by some dealers that Canada will not be able to meet the normal requirements of American consumers.

Sulphite, foreign—	
Bleached, ex-dock	**3.00 @ 3.10**
Unbleached, ex-dock	**1.05 @ 2.15**
Sulphite, domestic—	
Bleached, ex-dock	**2.70 @ 2.80**
Unbleached, ex-dock	**2.00 @ 2.15**
Soda, domestic—	
bleached delivered	**2.20 @ 2.30**
Scandinavian Kraft	**1.90 @ 1.95**

BAGGING, ROPE, ETC.

There has been a brisk demand for bagging and old rope and the tendency of values is firmer and upward. Spot stocks show a heavy decrease which in part accounts for lighter offerings, dealers having withdrawn from the market in an effort to realize higher prices in the near future. Quotations closed strong but unchanged.

Gunny, No. 1	**1.85 @ 1.90**
No. 1 Mill run	**1.45 @ 1.70**
Domestic	**1.60 @ 1.70**
Light Burlap	**1.60 @ 1.75**
Mixed Bagging	**1.00 @ 1.05**
Sound Bagging	**1.20 @ 1.30**
Wool Tares, light	**1.65 @ 1.75**
Wool Tares, heavy	**1.60 @ 1.70**
Foreign Manila rope	**2.60 @ 2.65**
Domestic Rope	**2.75 @ 2.85**
Mixed Rope	**1.05 @ 1.10**
Flax Waste	**3.45 @ 4.00**

IMPORTED RAGS

Limited arrivals of rags and some diminution of spot stocks together with freer inquiries, served to impart a firmer feeling to holders. Owing to bids being below quoted values, however, no appreciable increase in sales was noted and in numerous cases holders were inclined to shade quotations in order to market their surplus stocks.

German Blue Cottons	2.20 @ 2.25
Dutch Blues	2.20 @ 2.30
French Light Blues	2.20 @ 2.45
New Light Prints	3.70 @ 4.45
New Mixed Prints	2.95 @ 3.40
German Linen Blues	3.45 @ 4.15
German Linen, Gray	4.45 @ 5.28
German S. P. F.'s	3.45 @ 3.65
German Light Prints	1.95 @ 2.45
Dark Colored Cottons	1.10 @ 1.20

DOMESTIC RAGS

Prices of the better and lower well graded qualities of rags ruled steady under a fairly good demand. In some quarters dealers adhered to current quotations, while in others concessions have been offered on round lots. Collections show no improvement which operated in favor of a better sentiment in trade circles. The close was steady but no quotable changes in values were announced.

New Shirt Cuttings, No. 1	**5.20 @ 5.40**
New Shirt Cuttings, No. 2	**3.45 @ 3.65**
Fancy Shirt Cuttings	**3.30 @ 3.60**
New Blue Cottons	**2.70 @ 3.15**
New Dark Cotton	**1.45 @ 1.70**
New Unbld ctgs	**5.45 @ 6.00**
New Black Cottons	**1.70 @ 1.95**
No. 1 Whites	**2.70 @ 3.20**
Soiled Whites, street	**1.15 @ 1.25**
Soiled Whites, house	**1.75 @ 1.90**
Thirds and Blues	**1.30 @ 1.40**
Satinette Garments	**1.10 @ 1.20**
No. 3 Satinettes	**1.00 @ 1.05**
No. 4 Satinettes	**.85 @ .90**
No. 1 Tailor's Rags	**.70 @ .75**

TWINES

The market for both rope and twines has been more or less unsettled, in sympathy with dormant and easier primary markets for jute and hemp. The export demand has been fairly active, but scarcity of freight room has restricted business. Locally only a moderate volume of sales has been reported at somewhat irregular figures, particularly for twines.

No. 1 Hard White Shavings	**2.35 @ 2.40**
No. 2 Hard White Shavings	**1.95 @ 2.00**
No. 1 Soft White Shavings	**1.60 @ 1.70**
No. 1 Colored Shavings	**.75 @ .85**
No. 2 Colored Shavings	**.55 @ .60**
Magazine Flat Stock	**.80 @ .85**
No. 4 Crumpled	**.65 @ .70**
Solid Ledger Stock	**1.70 @ 1.80**
Ledger Stock	**1.30 @ 1.45**
White Blank News	**1.00 @ 1.05**
Extra Manila Cuttings	**.85 @ .95**
New Manila	**1.25 @ 1.35**
No. 1 Manila	**.60 @ .70**
No. 2 Manila	**.30 @ .40**
Box Board Chips	**.25 @ .35**
Bogus and Mill Wrappers	**.40 @ .45**
Strictly Overissue News	**.45 @ .50**
No. 1 Mixed	**.27 @ 25**
Folded News	**.30 @ .40**
Common Papers	**.20 @ .25**

OLD PAPERS

There has been a continued good demand and we hear of fairly large orders having been booked at steadier values. The bulk of business has been confined to the lower descriptions and the better qualities of well graded papers. Spot stocks are fair and no further large accumulations are looked for owing to small collections, which are not likely to show any improvement in the near future. Prospects for a renewal of an active demand in the fall are more promising. Manilas and common papers closed stronger showing advances of 5 to 10c over recent quotations.

Sisal Hay	**8½ @ 9**
Sisal Lath Yarn	**8 @ 8½**
Manila Rope	**12½ @ 13**
Manila Rope, No. 2	**11½ @ 12**
Jute Rope	**6¾ @ 7¼**
Jute Wrapping Twines—	
2 to 6 ply—	
No. 1	**10½ @ 11**
No. 2	**8½ @ 8¾**
Jute Twines, 18	**12¼ @ 12¾**
Jute Twines, 24	**11¾ @ 12¼**
Jute Twines, 36	11¼ @ 11¾
Jute Twines, 46&60	11¾ @ 11¾
Jute Twines, 4½&6	6¾ @ 7¼
Paper Maker's Twine	5½ @ 6
B. C. Hemp, 18	17 @ 17¼
B. C. Hemp, 24	16½ @ 16¾
B. C. Hemp, 36	16 @ 16½
Amer. Hemp, 4½&6	14½ @ 15

CHEMICALS

The feature of the market for papermaking chemicals was the strong upward tendency of values, owing to scarcity of spot stocks and an active demand. Bleaching powder on the spot was advanced to 2½ to 2¾c a pound as to quantity and make ordered; offerings have, however, been very light as a result of producers having practically sold their entire output; in some instances large spot lots were booked at 2c, but toward the close sellers adhered to quotations; contracts covering 1916 deliveries were held at 1½c and upward as to terms of sale. Caustic soda ruled firm owing to small spot

Continued on page 36

Telephone {1700 / 1701} Broad   Cable Address, "Lagerlot Newyork"

Scandinavian-American Trading Company

PRODUCE EXCHANGE BUILDING, NEW YORK

IMPORTERS AND EXPORTERS OF

FOREIGN AND DOMESTIC

WOOD PULP

OF ALL KINDS

AND

PAPER MILL SUPPLIES

HANS LAGERLÖF, Pres.

Use Positive Filling

Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

A steel filled Jordan produces yellow paper. Use our Positive Shell Fillings,

they are not affected by chemicals in your stock, in connection with our bronze Plug Filling.

Correspondence from any mill invited

BAHR BROTHERS MANUFACTURING CO.

211 I. O. O. F. BUILDING MARION, IND.

SINCE 1878

BUCHANAN & BOLT WIRE CO.

HOLYOKE, MASS.

OUR SPECIALTY

FINE WIRES FOR MAGAZINE AND BOOK PAPERS

Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires

Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.

QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON

Foreign & Domestic
RAGS & PAPER
STOCK
New Cuttings, Jute Stock
Sizing
SULPHITE &
SODA PULPS

200 FIFTH AVE., NEW YORK

L. L. BROWN PAPER CO.

Adams, Mass.

Makers of First Class

LINEN LEDGER and RECORD PAPER

for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records

Ledgers
Linens
Bonds

TRADE MARK

Brown's Papers have always received the highest awards whenever exhibited in competition with other makes

Mills established 1850

The Watermark of Quality

LONDON: TEMPLE BAR HOUSE, 28 FLEET ST.

SYDNEY MELBOURNE WELLINGTON BOMBAY

Parsons Trading Company

Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

supplies and absence of offerings of supplies for delivery over the first half of next year; most orders booked called for shipments over the last half of 1916 at 1⅞ to 2c; spot lots closed firm at 5½c and upward, as to terms of sale, while for export contracts have been booked at 3½ to 4½c for 60 percent 1916 delivery. Sal soda closed steady but quiet at .60c for barrelled supplies, f.o.b. shipping point; spot lots of concentrated sold at 1½c and upward. Alum was active but scarcity of spot supplies restricted sales on a large scale; producers name 5c and upward for ground and 6c and over for powdered, while sulphate alumina closed at 1¾c to 2c for top grades and at 1.35 to 1.50c for low sorts. Brimstone sold fairly well at $22 to $22.50 a long ton. China clay closed firm, but only moderate sales were reported at $7.50 to $9 for domestic and at $12 and over for imported.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended September 18, 1915

WOODPULP

Price & Pierce, str. Frederik VII, Copenhagen, 150 bs. (30 tons) dry sulphite.

Felix Salomon & Co., by same, 1,450 bs. (145 tons) dry sulphite.

Bulkley, Dunton & Co., by same, 1,007 bs. (149 tons) dry sulphite.

Perkins, Goodwin & Co., by same, 2,650 bs. (265 tons) dry sulphite.

J. Andersen & Co., by same, Christiansand, 4,000 bs. (500 tons) dry sulphite.

E. Butterwotrh & Co., by same, 336 bs. (42 tons) dry sulphite.

Bulkley, Dunton & Co., by same, 300 bs. (60 tons) dry sulphite.

E. M. Sergeant & Co., by same, 150 bs. (30 tons) dry sulphite.

MISCELLANEOUS PAPER STOCK

Wilkinson Bros. & Co., str. Frederik VII, Copenhagen, 155 bs. old bagging.

Castle, Gottheil & Overton, str. Gouverneur de Lantshiere, Havre, 517 bgs. chiffons.

E. Maurer, str. Mexico, Nassau, 5 bs. waste.

A. Katzenstein, str. Den Airlie, London, 307 bs. rags.

W. O. Davey & Son, by same, 402 coils old rope.

Stratford Oakum Co., str. Kansas City, Bristol, 365 coils old rope.

Brown Bros. & Co., str. Lapland, Liverpool, 20 bs. bagging.

M. O'Meara & Co., str. Adriatic, Liverpool, 137 bs. old bagging.

Continued on page 38

Mendelson Bros. Paper Stock Company
Packers of all grades of
PAPER STOCK
General Offices: Karpen Bldg., 900 Michigan Blvd.
Daily Capacity 200,000 Lbs.
Packing Houses and Warehouses Chicago, - - Ill.
When you want quantity and quality in stock, write us.
Long Distance Phones Harrison 2840-5557

The better twines—those you can depend on—are
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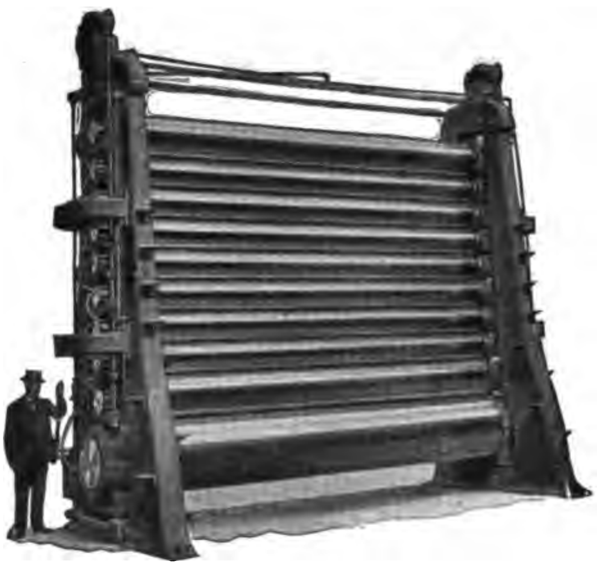

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Continued from page 36

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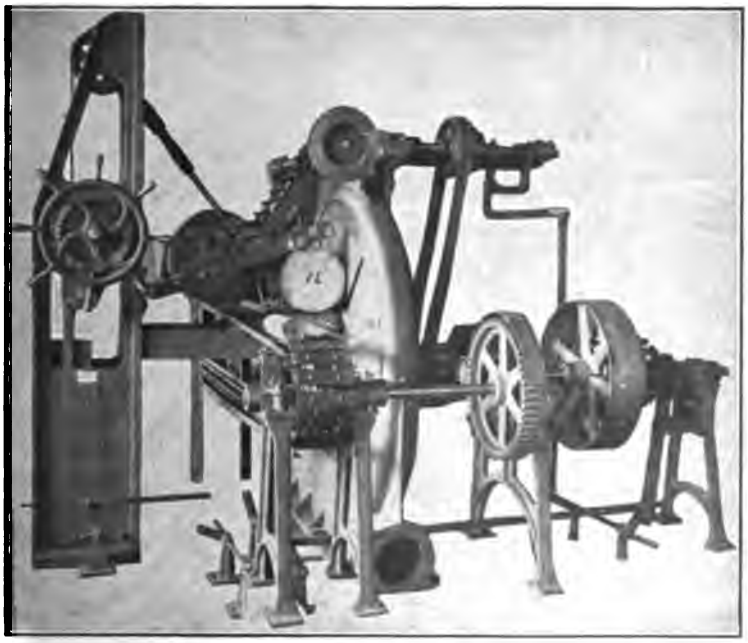

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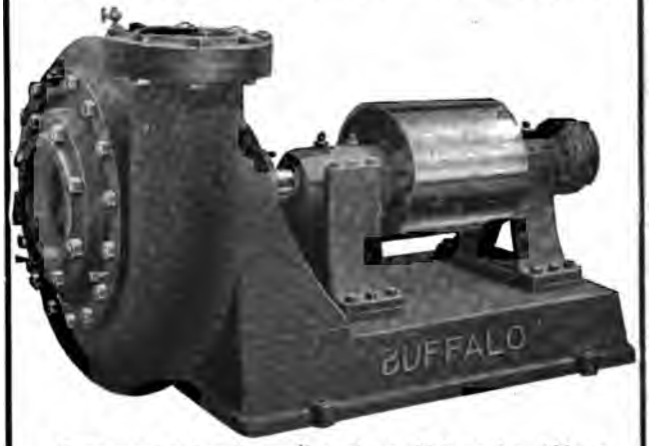

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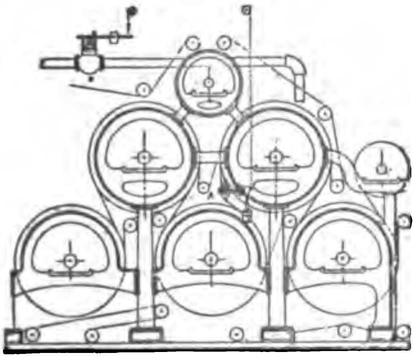

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Cabble, Wm., Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES
Swenson Evaporator Co., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

GENERATORS AND MOTORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS
Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holvoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP
Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE
Fox Paper Company, Lockland, O.

HOSE
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

HYDROELECTRIC PLANTS
Field, William T., Watertown, N. Y.

JORDAN ENGINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

JORDAN LININGS
Bahr Bros. Mfg. Co., Marion, Ind.

KNIFE GRINDERS
Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES
Dilts Machine Works, Inc., Fulton, N. Y.
L. & I. J. White Company, Buffalo, N. Y.

KRAFT PAPER
Berlin Mills Co., Portland, Me.
Fox Paper Co., Lockland, O.
Rantoul Co., C. W., New York.

KRAFT SODA PULP
Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

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Preston's Digester Lining Co., Ltd., Radcliffe, England.

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International Process Co., New York.

LUMBER
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Westinghouse Machine Co., E. Pittsburgh, Pa.

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MILL CONSTRUCTION
Field, William T., Watertown, N. Y.

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Westinghouse Elec. & Mfg. Co. E. Pittsburgh, Pa.

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Boston Belting Co., Boston, Mass.
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Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
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Glens Falls Machine Works, Glen Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Improved Paper Machinery Co., Nashua, N. H.
International Process Co., New York.
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Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Eng. Co., Florence, Mass.
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Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

PAPER DEALERS
Pulp & Paper Trading Co., New York.

PAPER EXPORTERS
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Fox Paper Company, Lockland, O.
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Castle, Gottheil & Overton, New York.
Heller & Merz, New York.
Morey & Company, Boston, Mass.
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Brown, L. L., Paper Co., Adams, Mass.
Cliff Paper Co., Niagara Falls, N. Y.
Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
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Salomon, Felix & Co., New York.
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Atterbury Bros., Inc., New York.

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Economy Eng. Co., Chicago, Ill.

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Buffalo Forge Co., Buffalo, N. Y.
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Noble & Wood Machine Co., Hoosick Falls, N. Y.
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Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

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Farrell Foundry & Machine Co., Ansonia, Conn.
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Boston Belting Co., Boston, Mass.

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Arabol Mfg. Co., New York.
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Scott, Ernest, & Co., Fall River, Mass.

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Glens Falls Machine Works, Glens Falls, N. Y.

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Howe Scale Co., New York.

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Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

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Hardy & Sons Co., Wm. A., Fitchburg, Mass.

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Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

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Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Barker, E. R., Boston, Mass.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
Berlin Mills Co., Portland, Me.
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Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

SULPHUR
Union Sulphur Co., New York.

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Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

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Howe Scale Co., New York.

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Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

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St. Regis Paper Co., Watertown, N. Y.

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Heller & Merz Co., New York.

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Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS
Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa

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Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

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(Arc)
General Electric Co., Schenectady, N. Y.

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Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES
Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York
Cheney Bigelow Wire Wks, Springfield, Mass
Eastwood Wire Mfg. Co., Belleville, N. J
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.

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Advertisements for this page will be accepted at the rate of 10 cents a line, each insertion, cash to accompany order. A line averages seven words.

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EFFICIENCY ENGINEER AND CHEMIST desires position in up-to-date paper mill in a technical or executive capacity. Has had charge of testing laboratory and is thoroughly familiar with routine work and with tests on operating methods and conditions. An as engineer has had considerable experience in mill practice, cost accounting, etc., and, in addition, is thoroughly familiar with the actual manufacturing process itself. Further particulars and references will gladly be furnished interested parties on writing H. W. F., care of PAPER.

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Technical Section Report in this Number

PAPER

A WEEKLY TECHNICAL JOURNAL FOR PAPER AND PULP MILLS

Published by PAPER, Inc.
117 East 24th Street, New York

SEPTEMBER 29, 1915

Vol. XVII
No. 3

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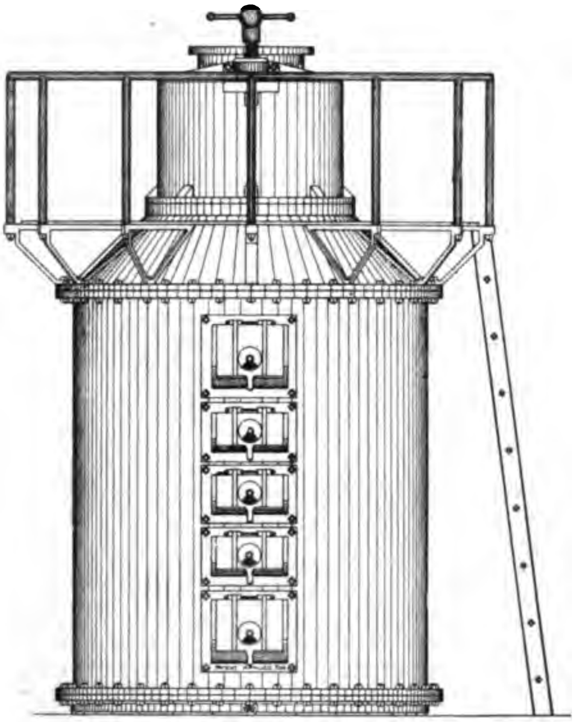

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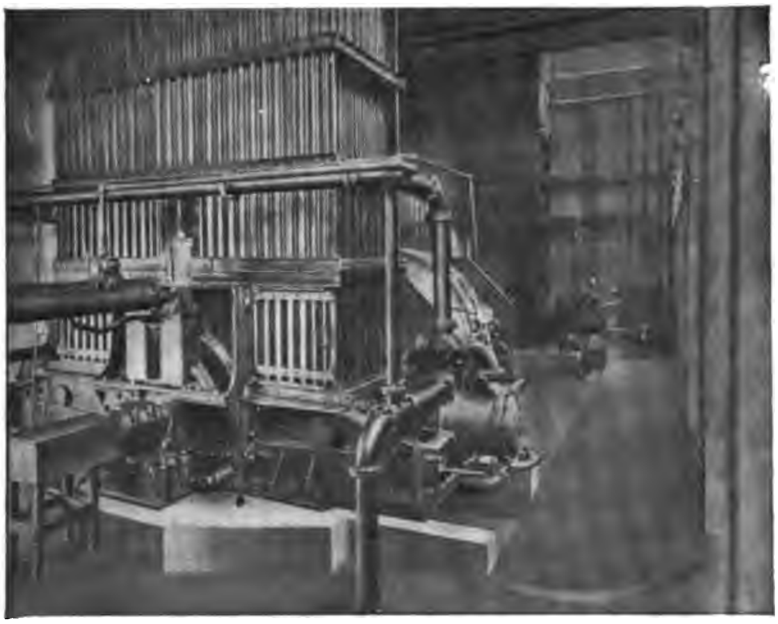

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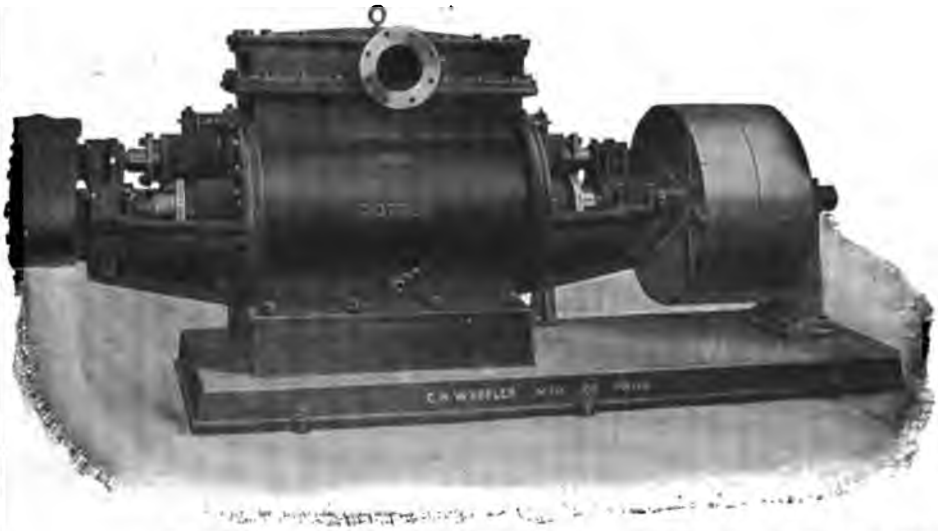

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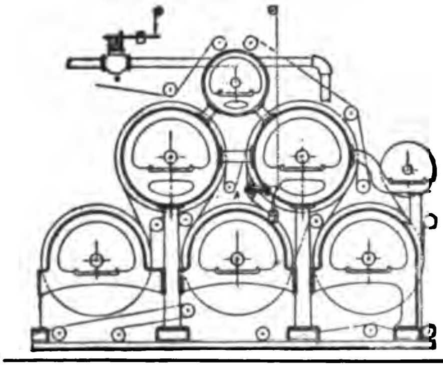

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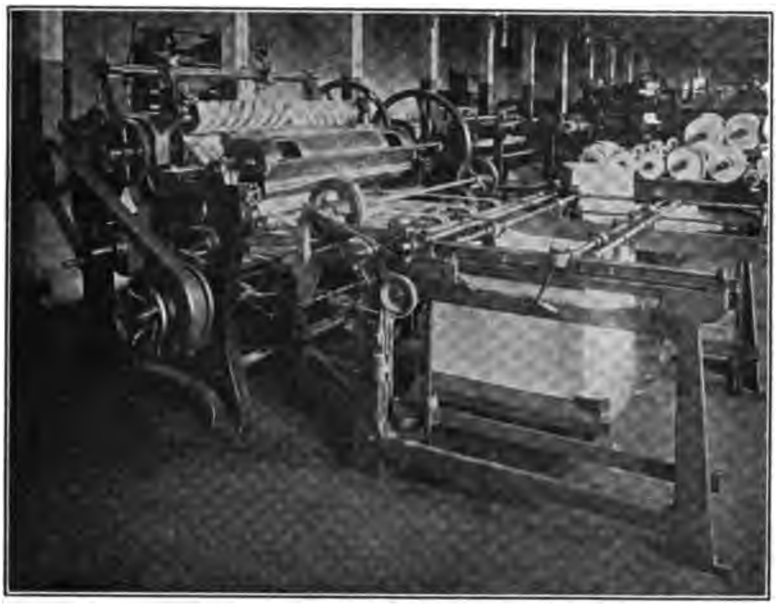

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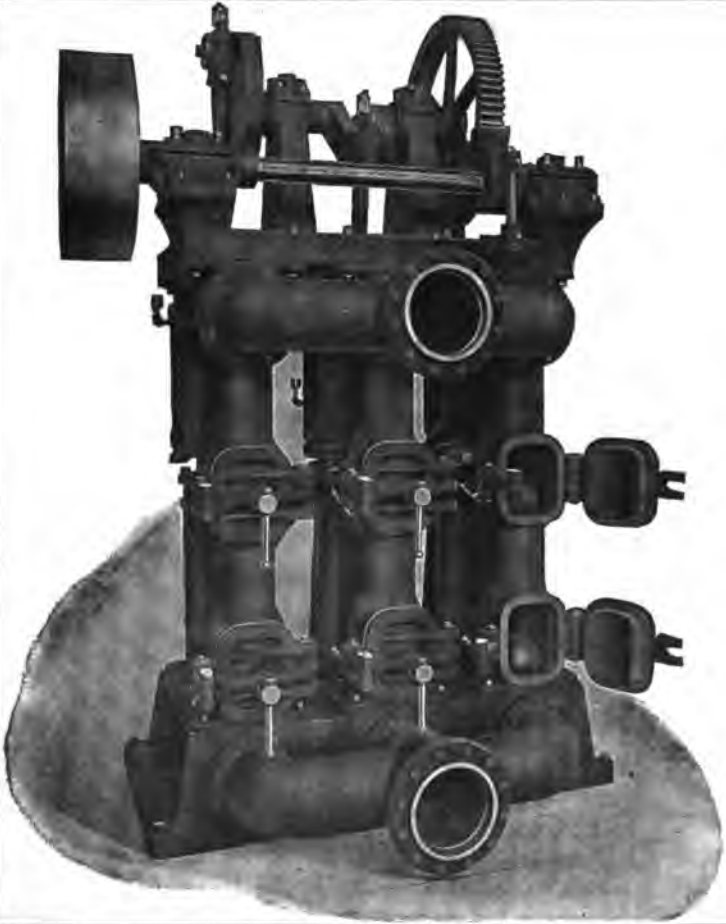

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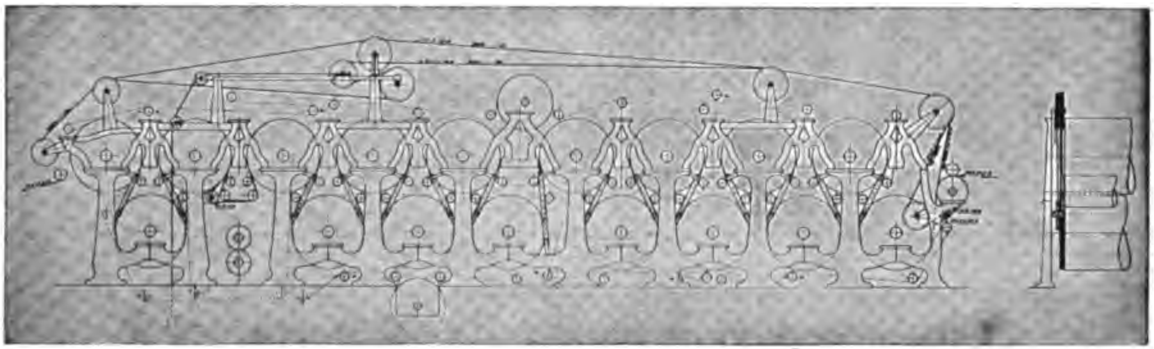

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Vol. XVII SEPTEMBER 29, 1915 No. 3

Technical Section of A. P. & P. A. Meets

Decides to Admit to Active Membership Others Besides Employees of General Association—Much Work Disposed of in One Day's Sitting

COMMITTEE APPOINTMENTS INSURE ACTIVE COOPERATION WITH UNITED STATES FOREST PRODUCTS LABORATORY

THURSDAY, September 23, was Papermakers' Day at the National Exposition of Chemical Industries in the Grand Central Palace, New York. On that day the Technical Section of the American Paper and Pulp Association held a meeting in the lecture hall of the exposition building, which lasted from the opening of the exposition at 11 o'clock in the morning till five o'clock in the afternoon. The attendance of members and officers was gratifyingly large, and the keenest interest was manifested by all throughout the entire proceedings.

This meeting demonstrated the value of the organization to the paper and pulp industry of the country in a striking manner, and furnished a good augury for the annual convention to be held with the parent association next February. Papers and addresses of unusual merit were delivered by members of the Section who have specialized in the lines of work forming the subject of their discourses, while the relation of the paper industry to the scarcity in dyestuffs was discussed by the principal producer of dyestuffs in this country, a man who was exceptionally well qualified to throw light on the situation, and who made plain to all the reasons for America's failure to develop the manufacture of coal tar dyes.

Summarizing the important work of the Technical Section of the American Paper and Pulp Association at this meeting, especially noteworthy and calculated to have beneficial results on the progress and development of the Section, was the adoption by unanimous consent of an amendment to the Constitution providing that active membership in the Section be not restricted to employees of members of the American Paper and Pulp Association. This paved the way for the selection of specialists for appointment as chairmen of important committees, through which much of the work of the Section will be hereafter conducted. Special investigations and researches will be carried on during the year in this way by committees on Soda Pulp, Sulphite Pulp, Sulphate Pulp, Mechanical Pulp, and Standard Methods of Testing Materials Used in the Manufacture of Paper. Close cooperation with the Government laboratories at Madison, Wis., was insured by the selection of a member of the Forest Products Laboratory's staff as the chairman of an important committee.

The exposition authorities give credit to the Technical Section for conducting the most largely attended meeting, at which more papers of technical value were presented and discussed, than any other scientific or technical body that met during the week.

The Technical Section occupied a large booth adjoining the spaces taken by the American Chemical Society, the American Electrochemical Society and the American Institute of Chemical Engineers, through which a constant stream of visitors passed. Thanks to the kindness of some of the larger firms of paper mill engineers and paper manufacturers the booth was furnished with large framed pictures of typical pulp and paper plants and exhibits of raw materials, fibers, and pulp and paper in various stages of manufacture. The Department of Commerce sent two boxes of exhibits, representing specimens of typical papers manufactured in various foreign countries, and these received a goodly share of the attention of the visitors.

Four framed pictures in colors from the Bern Exposition of last year depicted papermaking epochs in the world's history, beginning with a period dating back some 5,000 years before the Christian era—when the papyrus plant was the medium on which writings, official and popular, were made public—down to the invention of the continuous papermaking machine by Louis Robert in 1799.

A number of members met with the Executive Committee on Wednesday and arranged an order of business for the next day's meeting as follows:

ORDER OF BUSINESS FOR MEETING OF THE TECHNICAL SECTION

1—11 o'clock A. M. Opening of the meeting.
2—Address by President Frank L. Moore.
3—Report of the Executive Committee, by W. G. MacNaughton.
4—Report of the Secretary-Treasurer, by Thomas J. Keenan.
5—Report of the Publication Committee, by Charles F. Rhodes.
6—An account of the Work of the German Association of Cellulose and Paper Chemists, by Henry F. Obermanns.
7—Remarks on the Adoption of Standard Tests and Processes, by Dr. Otto Kress.
8—New Business, Resolutions, etc.
9—Appointment of Committees.
10—Address by I. F. Stone on "The Dyestuff Situation in the United States."
11—Reading of Papers.
  (1) "Some Experiences in Refining Groundwood Slivers," by Mr. D. L. Bellinger.
  Discussion
  (2) "A Method of Determining the Current Capacity of a Cell in an Electrolytic Bleach Plant," by Mr. F. G. Wheeler.
  Discussion
  (3) "The Possibilities of Accurate Determinations of Groundwood in Papers," by Max Cline.
  Discussion
  (4) "The Relation of Ink and Paper in Halftone Printing," by Mr. H. P. Carruth.
  Discussion
  (5) "Diminution of Fuzz in Soda Pulp by Proper Cooking Conditions," by Mr. S. D. Wells. (Read by Dr. Otto Kress.)
  Discussion

Discussions on papers were limited to ten minutes.

It will be seen from the foregoing that much important work was provided for the officers and members, and it is satisfactory to report that with one exception the programme was adhered to and everything went smoothly. The deviation from the official order of business was trifling and only caused a delay of some thirty minutes in assembling for the afternoon sitting. During the adjournment for luncheon, one of the lecturers engaged by the exposition authorities took possession of the lecture hall and gave an illustrated talk on "Explosives." At the request of the secretary of the Section he courteously cut short his discourse and allowed the proceedings of the Section to continue.

The papers presented to the Section all reached a high level of excellence and the discussion in instances was animated. Some of the important communications made to the meeting are printed in connection with the accompanying detailed report of the proceedings, and one of the technical papers is published in full. It may be necessary to delay publication on one or two of the other papers owing to the nonreceipt of photographs of charts and subjects intended to illustrate them, but the papers will be published as soon as the illustrations are received and the space is available.

The exposition was opened with an address by Dr. Charles H. Herty, president of the American Chemical Society, who made an earnest argument in favor of Government protection and encouragement for the chemical industry and against its exploitation by speculative stockjobbing interests.

A number of papers on subjects of interest to chemists and those connected with the chemical and allied industries were also read, many of them profusely illustrated by lantern slides and cinematograph.

As an initial effort, the exhibition and attendant exercises were in every respect creditable alike to those to whom its inception is due and to those to whom its organization and management were entrusted.

A detailed report of the business meeting of the Technical Section follows:

Detailed Account of the Proceedings

Chairman Henry E. Fletcher opened the proceedings with a few well considered words of greeting and immediately introduced President Frank L. Moore, of the American Paper and Pulp Association, who made the address of welcome. Mr. Moore said:

WELCOMING SPEECH BY PRESIDENT MOORE

"Gentlemen: In looking over the programme, I see they have arranged for me to deliver an address of welcome. Now, being in New York City, and not being the mayor of the city, I cannot extend to you an open town or turn the keys of the town over to you, as I might if you would come up to Watertown, but I can heartily welcome you in behalf of those in charge of the exposition. I know that those in charge of the exposition have done everything that was possible to make the meeting of the Technical Section a success.

"I feel I owe you gentleman an apology for not having taken the time to prepare a paper such as should be given to you here this morning, but I have been too busy to do it; and if my remarks seem somewhat disjointed and disconnected, you will make allowances for my state of unpreparedness.

"This Section of the American Paper and Pulp Association was started at the last annual meeting, held in this city in February. At that time, there was a committee appointed to prepare preliminary plans and methods under which it might be organized, and your president was given the power to appoint a permanent committee. The committee which was selected at that time was such an excellent one that I made it permanent, and, as you will agree with me, I think, I did not make any mistake in making that committee permanent, judging from the work which they have done in perfecting the organization and bringing it to the position which it now occupies. It is far yet from being what it will be, because I predict that the Technical Section will be the strongest, the most important, and the best of any division which may be created by any organization of paper manufacturers in this or any other country. This wonderful exposition of the chemical industries where we are holding our meeting is a remarkable evidence of scientific development of the country. As these expositions continue year after year, I predict it will be the same as with other organizations. It will grow, not only in size, but in interest, and the attendance will increase.

IMPRESSIONS OF THE EXPOSITION

"Now, I have been very much impressed, in my visits here, two evenings this week, to find various exhibits in which I am directly interested as a manufacturer. It would have taken a great deal of time and cost me a good deal of money if I had been obliged to go to the various plants or places where the machinery is built and in operation to investigate. It is all here, however, and the Technical Section will, I hope, some day become strong enough to conduct an exhibit of its own, where can be shown the improvements in paper mill machinery, new inventions and results of the investigations and researches of the Government and of mill chemists, all in connection with its regular meeting. I hope I will live to see that accomplished.

"Your work brings together manufacturers, chemists and engineers and technical men from all lines, kinds and grades of pulp and paper. You are different from any other branch or division of the American Paper and Pulp Association in that respect, and, that is why you are so important to the industry as a whole.

THE EUROPEAN SITUATION

"We are living in a wonderful age, a strange age. I say so, because it is an age in which we witness all the forces which have tended towards civilization and Christianity waging the greatest war that the world has ever seen, a war that when over will leave continental Europe a devastated waste. It cannot result otherwise; and, still, the forces that are carrying on this war, that are back of it, that have done the work, are represented by technically trained men. We see that in the progress that is being made by both sides in this great struggle. It is a war that is carried on differently from any war previously waged. You take the manufacturing industries. I will refer to Germany. Their civilization over there had reached a point where it was so intensive, their population so great, their territory so well taken up and acreage so small per person that they could not take up the agricultural pursuits. What was left for them to do? To develop the trained man, that he might go into the industries and develop them, also the commercial side, and make those countries the prosperous countries that they are today.

HOW THE TECHNICAL SECTION WILL HELP

"We paper manufacturers compete with foreign trade, and having foreign trade we must develop the technical side. I know of many mills employing technical men today that a few years ago would have been considered unnecessary. Today, however, those technically trained men are making money for those mills, and that is where the Technical Section is going to help the industry in a way in which the American Paper and Pulp Association could not do with any other division.

"I do not intend to speak disparagingly of the work of any of the other divisions, because the work laid out for them is being handled in an excellent and satisfactory way, but it is different work.

"You have on your programme today papers and discussions by practical men, men who have been "through the mill," as it were, and know what they are talking about. When a man is through talking, I hope you are going to arrange it so you can ask him questions and get a discussion started. That is the way to bring out facts and accomplish things. You take the meeting of this Section in February. There were two or three papers read there, and the first time I was at the mill after that, my superintendent said to me, 'I want to belong to that Technical Section.' I asked him if he did not want to come down here today. He said, 'No, I don't want to come down now, but,' he added 'there was one paper in particular,' and he kept at me, and insisted on me reading and studying it. He said, 'It has given me more ideas on that particular subject than anything I have ever been able to gain elsewhere.'

"That is the kind of work that is going to make this Section valuable to the mills.

"Now, I would suggest that we have some committee to which questions on technical subjects, or any subjects that might come up in connection with problems that you may be working out in your own mills, can be referred, or have them handled by the secretary, and referred to whatever committee he thinks advisable.

TESTS AND STANDARDS

"There is another matter, too, which I believe this Section should handle, though it is something that in a way has been already brought up and disposed of by the American Paper and Pulp Association. That is the question of tests or standardization of tests between imported pulps and the importers and the consumers. I believe the standardization of processes or methods, and the adoption of tests for pulps should come from this Section, which should be represented on the committee of the parent association.

THE COLOR SITUATION

"There is one question that is more to the fore today than any other, perhaps, in the minds of paper manufacturers, and that is the color situation. About the only color that anyone sees today is black—everything appears black (Laughter). Now, if we could use black paper to print on all might be supplied with it.

"However, I am not going to say very much on the color situation, because I have not very much to say, except I do not believe any color will come in from Germany until one of two conditions prevail, and that is that the war ends and the freedom of the seas will be given to commerce and shipping, and the other is that cotton is allowed to enter Germany.

"I make that statement because I have seen within forty-eight hours cablegrams, wireless messages, and letters that have passed between the Imperial German Government and this country, and between this country and Germany, and unless there is something back of it all, concerning which we are ignorant, what I have said represents the conditions that prevail in the color industry.

GOVERNMENT AID

"A great deal is being published in the newspapers regarding the color situation which can hardly be regarded as facts. We must bear in mind that a color industry that has taken years and years to develop in Germany cannot be reproduced here in this country in a month, six months, a year, or a year and a half. It is going to take time to start the industry, and I am in accord with the work that the Government is doing, but I think they should realize the seriousness of the situation and the conditions which confront all manufacturers who use color, of whatever name or nature they may be. I believe the Government should provide an appropriation of at least $25,000,000 to develop the color industry here.

"The Government is in a position, I believe, if this is properly presented to them, where their appropriations could be largely increased. I might say also that in order that the paper manufacturers might share in the dyestuffs, and know what was being done in case dyestuffs should come into this country, which some few months ago we had hoped would be the case, that I was asked to be one of the incorporators of a company to which two or three shipments of color, which at that time was expected to come here, could be "cleared" to, and I was insistent, in doing that, in order that the paper manufacturers might receive their share of those shipments. I had every assurance that they would, but the unfortunate sinking of the *Lusitania* brought all negotiations of that kind to an end, just at the time when it was expected that some two or three boat-loads of color would be sent over.

"I am informed this morning that everything is being done that can possibly be done to deliver the raw material or the basis of colors to manufacturers in Switzerland, so that Swiss color manufacturers could increase their output. That is the word we get this morning, and this Government here is assisting in that to every possible extent, not only in the interests of the paper manufacturers, but the interests of all users of color in this country. What the outcome will be or what the result will be, I do not know. That is problematical. Your guess perhaps is as good as mine on a thing of that kind.

CONGRATULATIONS AND PREDICTIONS

"I am pleased to see so many here; to see the interest that is shown in this Section, the success of which is going to depend upon you gentlemen. There will be various committees appointed today; committees that I know from experience in past work are not powerless, but their work is curtailed unless each individual member of the organization will assist and make suggestions—criticize what they are doing. When you do that, then you are going to have an organization that is going to be worth while, and I predict between now and the next meeting of the American Paper and Pulp Association in February, that when this Section meets at that time you will have three or four times the number of people present that you have here this morning.

"Gentlemen, I desire to thank you for this opportunity of speaking to you." (Applause)

CHAIRMAN FLETCHER RESPONDS FOR THE SECTION

Chairman Fletcher expressed the thanks of the Section to President Moore, and in regard to one point that he had brought up, the question box, said a number of inquiries had been received covering different subjects, but the Section had not yet gotten down to any system of handling them.

"Last week we had a letter come in from a firm inquiring about repairs and maintenance. The cost of their repairs and maintenance was running too high, and they wanted a basis of comparison with some other fellows, so we put them in touch with members who could give them the needed information. If there is anybody here similarly situated and he will simply send his inquiry to the secretary, the proper committees will attend to it for him.

"In regard to the membership, as President Moore has said, we have only been in existence about three months, and have been after members. We already have about 130 members, and without any doubt by the annual meeting in February, if the accessions keep up at the same pace, we will have 250 members of this Section alone. I can safely say already that the 130 we now have represent some of the best talent that there is in the country today. We will now take up the next order of business, which is the report of the Executive Committee, by Mr. MacNaughton."

W. G. MacNaughton accordingly submitted the following:

REPORT OF THE EXECUTIVE COMMITTEE

"Gentlemen: To say that the Technical Section of the American Paper and Pulp Association is fairly launched expresses in a few words the work that has thus far been accomplished by the Executive Committee.

"A constitution has been drafted, a permanent Secretary-Treasurer, Mr. Thomas J. Keenan, F. C. S., secured, and PAPER designated as the official journal of the Section.

"That the formation of the Technical Section has received the endorsement of the technical and practical men in paper manufacturing, as well as by others in allied lines, is evidenced by the number and standing of the applicants for membership in the Section.

"Your committee feels that the future development requires careful thought in order to establish the Section on a thoroughly firm footing. The offer of four $100 prizes for papers on thoroughly practical subjects should serve as a stimulus to investigation by chemists and mill men. The best stimulus, however, is personal contact, and plans have been discussed looking to the establishment of local subdivisions of the Section so that members could hold meetings at more frequent intervals than would be possible if only general meetings were held.

"The appointment of permanent committees on standard methods of testing and analysis should be considered and possibly also committees to cover certain lines of investigation.

"That the present meeting, the first since the establishment of the Section, should meet with the National Exposition of Chemical Industries is eminently fitting, thereby emphasizing the chemical basis on which the entire industry rests.

"For the Executive Committee,
"W. G. MACNAUGHTON"

On motion by Mr. Cline, duly seconded, the report of the Executive Committee was adopted.

The report of the secretary-treasurer, was then called for and submitted as follows:

SECRETARY-TREASURER'S REPORT

"To the Members of the Technical Section of the American Paper and Pulp Association.

"Gentlemen: Your secretary-treasurer desires to make grateful acknowledgment of the many courtesies extended to him by the officers of the Section since he assumed office at Chicago on May 6 last. As a result of correspondence, applications for membership in the Section have been received from a large number of men employed in the paper, pulp and allied industries in all parts of the country, and nearly all of the candidates have been admitted after their eligibility had been passed upon by the Executive Committee and their qualifications for membership had been found to meet the constitutional requirements of the Section.

"Since the meeting in Chicago our membership has been increased by 119, so that our total membership to date is 125, with some applications yet pending.

"The work of the secretary-treasurer's office during the past four months has been largely confined to building up the membership, and recording the progress of the Section through publications in PAPER, the journal of the Section, and by means of literary work contributed to other publications circulating among mill chemists and engineers. In this way much desirable publicity has been obtained for the aims and purposes of the Section, especially with regard to the offer of prizes for the solution of problems confronting the technical men in the industry. Announcements of the prize competitions have appeared in all of the American paper trade periodicals, and excellent accounts of the organization of the Technical Section have also been published in the technical press of England, Sweden, Norway, and Germany, to mention only those which have come under your secretary's own notice, and of which copies are preserved among the papers belonging to the Section.

"Thanks to the initiative of President Frank L. Moore and the generous hospitality of Charles F. Roth and Adriaan Nagelvoort, managers of the National Exposition of Chemical Industries, the Section was assigned space for a booth in the Exposition, for use both as headquarters and as a rest room for the members during the week of the Exposition. In addition, an ample supply of free tickets of admission was furnished, so that your secretary was able to enclose two tickets to each member with the official announcement of the meeting. A hall for our meeting and rooms for committee work were also placed at our disposal. The management of the Exposition, and especially Messrs. Roth and Nagelvoort, have showered us with courtesies and attentions, and your secretary is glad of the opportunity to express his own personal sense of gratitude in this way.

"Through the medium of this report, your secretary would also express his gratitude to the firms which have assisted him in decorating the exhibition space occupied by the Section. To the International Paper Company, Joseph H. Wallace and Company, and George F. Hardy, of New York; and the Bureau of Foreign and Domestic Commerce, of the United States Department of Commerce, especial thanks are due for the loan of framed pictures of mill plants, specimens of papermaking materials and foreign papers.

"The appended quarterly statement and summary for the month of August will show the financial condition of the Section to be a healthy one, though it must be remembered that the officers are giving their services without remuneration. Strict economy has been practised in expenditures, the heaviest outlay being for postage and stationery supplies, apart from the share of dues appropriated for the payment of subscriptions for the official journal of the Section.

"Respectfully Submitted,
"THOMAS J. KEENAN,
"Secretary-Treasurer."

On motion of Mr. Obermanns, the report of the secretary-treasurer was accepted and took the usual course. It was explained that a complete report for the association year would be presented for audit at the annual meeting in February, 1916.

The next report to be read to the Section was that of the Committee on Publication, Charles F. Rhodes, chairman. It was as follows:

REPORT OF THE COMMITTEE ON PUBLICATION

"At the committee meeting held in Chicago April 6, 1915, Mr. Obermanns, Professor McKee and the writer were named to prepare subjects for prize competition articles on paper mill economic questions.

"After mutual correspondence we picked four questions of general common interest, which questions, together with rules governing the papers, have been fully presented in PAPER. In choosing these questions the committee had several things in mind besides the importance of the solution of the problems from the standpoint of the paper industry—*e. g.*: that the initial problems should fall in different lines, should be definite and not too large, should be capable of investigation without too broad a range of reading and would also call for papers by technical men in mill operations who, from observation and experience, could base conclusions on a careful study of operating conditions. The work was designed somewhat along the lines of the competitions founded by the German Association of Paper Chemists and was intended to be in keeping with the aims of the Section—to stimulate interest and encourage original investigation in pulp and paper mill problems.

"At the meeting of May 6 Mr. Obermanns and myself were named as a Committee on Publication and, while the functions of this committee have not as yet been fully defined, we have endeavored to cooperate with Mr. Keenan in connection with the preliminary work thus far carried on.

"The value of the Section to individual members, and through them to the pulp and paper industry, lies in the cooperation of the men engaged in paper and pulp chemical and engineering lines and the free communication and discussion of investigations carried on. This cooperation calls for getting together at the meetings, and providing a frank open discussion of the papers as presented, so as to make the Section a market place for ideas and suggestions on technical subjects relating to the industry and through subcommitttees effect a standardization on specifications and standard methods of tests and analyses for raw materials and products of manufacture, etc. The one essential for the success of the Section is for each member to realize that it is up to him to contribute his share of enthusiasm and experience. And it will be necessary for the parent organization of manufacturers to coöperate in allowing their technical men to contribute both time and results of their investigations.

"Respectfully Submitted,
"CHARLES F. RHODES,
"Chairman."

After the adoption of the report of the Committee on Publication, Henry F. Obermanns was called upon to present a paper on the work of the German association of paper and cellulose chemists, which he did as follows:

WORK OF THE GERMAN ASSOCIATION OF CELLULOSE AND PAPER CHEMISTS

"Mr. Chairman and Members: This is the first general meeting of the Technical Section of the American Paper and Pulp Association, and I feel gratified and proud at the privilege of witnessing this large gathering of paper men from all over the country.

"I should like to improve the opportunity by saying a few words in reference to the work accomplished by the Society of Paper and Sulphite Chemists, which, though a German society, draws its members from every part of the globe. About ten years ago, it was recognized by the technical men in the industry that great benefits would result from an organization of this kind, and, as a consequence, the Society of Paper and Sulphite Chemists was formed. This organization, starting with a membership of twenty-four, has added to its numbers until it now boasts of a membership exceeding 500. and 300 of the members reside in Germany. The remainder of the members' ip is divided as follows: Austria, sixty-seven members; United States of America, sixteen; Sweden, nineteen; Hungary, twelve; Russia, eleven; Servia, twelve; Great Britain, nine, Switzerland, eight; Italy, seven; France, five; Canada, five; South America, three; and a few members in each of the following countries—namely, Denmark, Finland, Portugal, Holland, Roumania, Belgium, Japan, and Mexico.

"From these figures, it will be seen that every civilized nation has one or more representatives in the organization of the German society and there naturally must be a reason for this universal movement on the part of scientific papermakers to become members; as a matter of fact, there are several reasons:

"(1) This so far was the only organization on earth, which in a scientific way analyzed and studied the art of paper and pulp making, and,

"(2) The results of such study were made accessible to all the members of the society.

"I just said that it is the only organization of its kind on earth. I am very much pleased to be able to correct this statement, and say it *was* the only organization of its kind, because with the formation of the Technical Section of the American Paper and Pulp Association, we have an organization of our own, an organization, which, during the few days of its existence, has already grown to a membership of 125 and with indications that it will soon be the largest organization of its kind extant.

"The necessity of getting together to discuss chemical and technical matters had been felt for a considerable time, but it was not until the last annual convention of the American Paper and Pulp Association in New York, February, 1915, that tangible steps were taken towards the realization of these plans. Mr. Mahler and myself, who are both members of the German Society of Paper and Sulphite Chemists, were present at their last summer convention in Leipzig, June 23, 1914, and it was at that time that Mr. Mahler made the motion that an American branch society be formed, in order to keep its American members in better contact with the parent organization. This suggestion was received very favorably and if the war had not interfered, it undoubtedly would have been followed up.

"What does the Society of Paper and Sulphite Chemists offer its members?

"The membership dues amount to twenty marks, or the equivalent of five dollars a year. This entitles the member to a subscription for any one of the three principal trade papers, free of charge. These trade papers form the official mouthpieces of the organization and they publish all notices, minutes of meetings and technical articles of the society.

"Then, a committee is appointed, usually with a professor connected with one of the governmental papermaking schools at its head, for the compilation of a regular technical bibliography, together with abstracts of all articles pertaining to the pulp and paper trade and their related branches.

"The great importance of a work of this kind, having all articles appearing in the trade papers of all nations, compiled and classified so that they are at all times available for the benefit of the members can be readily understood.

"These lists appear in regular installments in the official organs of the society, and, furthermore, are published in pamphlet form and sent to the members of the society at regular intervals. Besides the title of the article and a short synopsis of its contents, the author and also the name and date of the periodical in which the article originally appeared are given, so as to enable anyone who is sufficiently interested in a certain subject to obtain the original and complete article.

"I have here a copy of a few of these publications which, after having circulated, kindly return to me.

"It is probably not unknown to you that Germany has a number of very good Government paper trade schools, and as all the leading men of these schools are also members of the society, a great volume of knowledge is put at the disposal of its members. At each of the yearly examinations valuable dissertations and compositions are worked out by the candidates of these schools. These articles and investigations are, of course, always based on laboratory experiments, but a great many valuable theories are discovered and made accessible to the members of the society. These articles are usually distributed in pamphlet form to the members. Furthermore, the society works in close touch with the Government testing bureaus, which also aid in maintaining a cooperation which is greatly beneficial to the trade in general.

"Another great benefit to the members of the society, are the lower prices on scientific books, which the society is often able to obtain for its members from the publishers. In many instances these books are given free to the members, as, for instance, the book which I shall pass around, entitled 'The Coloring of the Paper on the Paper Machine.'

"Another point worth mentioning is the solution of current problems. Any one of us is likely to encounter problems at times which cause considerable trouble and on which we would be glad to obtain additional information. This kind of work also falls within the scope of the society.

"I will also say a few words in reference to the question of prize problems, which has also been adopted for our Technical Section. Every year the society publishes from two to eight problems for the successful solution of which money prizes are offered. These prizes vary, but often amount to as much as 2,500 marks. In many instances additional prizes are offered by branches of the industry, or mills, which would particularly benefit by the correct solution of the question.

"These are only the more important points I care to mention and I trust that you will agree with me than any one of these points would be sufficient inducement for those interested to become members of such societies.

"The Technical Section of the American Paper and Pulp Association, though less than six months old, has already taken many steps in this direction, and with your cooperation and active support, it certainly should be able to do as much or more for its members. It seems to me that it would be taking a step in the right direction if after the war we should endeavor to get in touch with the German Society of Paper and Sulphite Chemists in order to start an exchange of ideas. This certainly would be to our mutual advantage.

"Respectfully Submitted,
"HENRY F. OBERMANNS."

Mr. Obermanns' paper was received with approval, and the chairman asked if there was any member who would like to discuss it or ask Mr. Obermanns any question in regard to his statement. Mr. Fletcher said:

"It is a good time now to hear from some of the members. After the reading of papers it is most desirable to get some discussions started and so have an interchange of ideas."

The paper was discussed by Martin L. Griffin, of the Oxford Paper Company, who said:

"Mr. Chairman, I will start the ball rolling. I can think of a good many questions, but I would not want to occupy the time unnecessarily. I should like to ask Mr. Obermanns what has been the result of offering prizes. I have read over carefully subjects of the four prizes offered. They seem to relate largely to the elements in the process of papermaking, and some of them struck me as requiring the permanent services of a controlling chemist and engineer, and I wondered how, in attempting to get hold of that $100—which, by the way, is not very much money to get hold of in these days with the high cost of living, etc.—just how fortunate and just how successful we might be in attempting the solution of some of them, as for example, prolonging the life of wire, and similar problems. I should like to ask Mr. Obermanns, as I concluded from what he has said that these prizes were to a degree patterned after the prizes offered by the German society, what success that society has had in getting papers.

MR. OBERMANNS—The problems put up for prizes are usually to a very great extent technical. There undoubtedly are many subjects brought up which many chemists are able to solve, but also other problems as, for instance, how to prolong the life of wires, which are problems that even the everyday mill man ought to be able to successfully answer. As we go along we undoubtedly will be able to ask questions which will require thorough study, and which will also require a good, complete library in order to successfully solve the questions. I do not know whether I have fully answered the question.

CHAIRMAN FLETCHER—Is that the answer that you were seeking, Mr. Griffin?

MR. GRIFFIN—What I wanted to know was, what really was the success of the offering or tendering of prizes for the answering or solution of such problems as are offered now in these four prizes; whether it really brings a number of contestants, and whether such questions are answered to the satisfaction of the paper trade, and whether they really make practical use of the solution offered.

MR. OBERMANNS—Unquestionably, as you say, $100 is not a large amount, although it is quite an item to some of the younger chemists. Another point which probably is of more value to them is the professional recognition that they get by getting their names and their essays published. They become better known in this way among paper men all over the country, which is a much larger asset than the $100.

CHAIRMAN FLETCHER—As I understand it from the information coming from Mr. Obermanns and Mr. Mahler, they are meeting with success in competitive essay work of this kind in Germany. As has been remarked, $100 does not amount to so much, but it is not monetary reward so much that they are looking for as a recognition of their work by the profession. Then there is the incentive to study and research.

Has any other member any questions to ask?

R. M. Radsch, of the Thilmany Pulp and Paper Company, inquired whether the prizes in Germany are earned mostly by the young men who are studying and who are taking a degree in the technical paper trade schools or by practical men who are out in the field working.

MR. OBERMANNS—I think it refers to both. For instance, the problem is published fully a year before the answer is required. This usually gives the man or men studying in one or more of the German colleges a chance to thoroughly look into the subject. However, it does not bar anyone, and the chemists in the schools as well as the consulting chemists are working on these problems.

MR. RADSCH—I was wondering whether the success of that scheme there was due mainly to the fact of the technical schools having men who carry on research along those lines while they have the time in school.

MR. OBERMANNS—Not at all.

CHAIRMAN FLETCHER—In these discussions, when a man gets up, I will ask him to announce his name; I cannot call every one by name here, although I can pretty nearly all, and it will keep our records straighter as to who has brought up these different subjects. If there is no further discussion on that we will listen to Dr. Otto Kress on "Suggestions for the Adoption of Standard Tests and Processes."

Dr. Kress said he felt rather diffident about getting up before an audience, as he did not have a carefully prepared address. What he would have to say represented a few observations he had jotted down in his notebook as he came East.

The text of Dr. Kress' paper, which was received with much favor, follows:

STANDARD TESTS AND PROCESSES

By DR. OTTO KRESS

At the present meeting of the Technical Section of the American Paper and Pulp Association, held in connection with the National Exposition of Chemical Industries, it seems an appropriate time to try and arouse interest in the development of a division whose purpose it should be to standardize methods of analysis for mill control. That the maximum efficiency in consumption of chemicals and production of pulps of best yields and quality has not been reached as yet is self-evident.

Many of our chemical industries, such as leather, gas, fertilizer, steel, cement, etc., have founded organizations for the systematic study and developing of rapid methods for accurate mill control, invariably followed by increased efficiency and saving in cost of manufacture. Manufacturing conditions will change very rapidly in the next few years, and for the paper and pulp industry to maintain its proper place, a more thorough control is essential.

We have established the Technical Section of the American Paper and Pulp Association, which is the first step, and I should like to lay before you the general outline of a control division of our organization and the scope of the work it might embrace. In order to do this I should like to consider the organization of the American Leather Chemists' Association, on account of the remarkable results obtained; being a member of the association, I am familiar with its aims and methods. There is no industry which in its mill practice is more arbitrary than the leather industry and none where the raw, intermediate and finished products offer such difficulties in chemical control as a consequence of our limited knowledge of the chemistry involved.

At this point I would like to pass out a few copies of the by-laws of the American Leather Chemists' Association, which give an outline of what has been done. I regret I could not obtain more of these. These are all I could get from the secretary. (Distributing copies of by-laws.)

Notwithstanding these difficulties, the leather chemists have succeeded in working out analytical methods for tanning material and factory control, which if properly applied in the tannery cannot fail to produce results. Further, the methods used are of the nature of proximate organic analysis found by actual laboratory work to be the most desirable and yielding concordant results in the hands of chemists, even where the interests of buyers and sellers of raw materials may be opposed.

That is due to the fact that methods of tanning analysis can be varied, depending on whether the interests of the buyer or seller are considered.

What has been done for the leather industry can certainly be done for the paper and pulp industry, and there are sufficient men in the mills, research and private laboratories of this country, interested in the advancement of our field, to an extent that they will be willing to bear their share of the burden.

If I should interrupt for a moment, I would like to read to you a few of the by-laws to show what this American Leather Chemists' Association is founded for. It says: "The objects for which this association is established are: (a) To investigate the methods of analysis of tanning materials, and all other materials connected with the manufacture of leather, with intent of perfecting or improving such methods.

"(b) To publish all papers and information on matters above mentioned in such manner as may seem advisable.

"(c) To do all other things in any way connected with the accomplishment of the objects above mentioned."

The result of this work is published in the journal of the American Leather Chemists' Association. I have only brought one along, and the results of the analysis—for instance, this happens to be on total solids—shows that the work there is carried through very successfully, and they adopt official methods at the end.

With regard to the management they say:

"The affairs of the association shall be managed by a council, consisting of a president, a vice president, a secretary-treasurer, vested in one office, and four ordinary members of council, all of whom shall be chosen from the active membership. The president, vice president and secretary-treasurer shall be elected at every second annual meeting, and serve from the close of the annual meeting at which they are elected to the close of the second succeeding annual meeting, or until their successors are elected. Two ordinary members of council shall be elected at each annual meeting and shall hold office for two terms, two retiring each term."

Then the next thing which is of interest here to us:

"The association shall consist of active and associate members, the latter having all the privileges of the association except that of voting."

The purpose of that is, of course, that the active members should decide what the official methods should actually be, and it is restricted to the chemists of the Leather Chemists' Association.

In regard to methods:

"Members shall certify upon their reports of analysis that the methods of this Association have been employed.

"Any proposal to change existing methods or to make provisional methods official must be submitted to the secretary in writing and be published by him in the next succeeding issue of the *Journal*. If the proposed change be approved by a majority of the council, it shall be voted upon by the active members of the association by a mail vote not less than ten or more than twelve months after the date of its submission," the idea of that being, of course, you can arouse criticism if someone else thinks that the work has not been done exactly according to the best way."

Continuing, the by-law on method reads:

"If voted upon favorably by two-thirds of the members voting, it shall become a part of the methods of the association. Unless approved by a majority of the council, it shall not be submitted to a vote of the association except, however, that if a majority of the active members of the association petition the council to submit the proposed change to a vote of the association, it must be submitted to such vote. The votes to be valid must reach the secretary within one month from the time they are sent out."

I should like to consider the way we would work, along the lines laid down by the work of the Leather Chemists' Association.

A preliminary outline of the work of the committee on pulp and paper testing might compromise a standardization of methods of control of raw, intermediate and finished products —viz.:

1. Soda Pulp.
2. Sulphite Pulp.
3. Sulphate Pulp.
4. Groundwood.
5. Control of materials and processes relating to paper, not included in the above group.

Applying the methods of the leather chemists to one of these subdivisions, as of soda pulp, a chairman is appointed who then selects a committee of two or three chemists, all of whom are familiar with the soda process. The committee submits its methods of analysis and control to the chairman. This may give two or three or four different methods. The chairman would then send typewritten copies of all four methods and samples of standard material to any chemist interested in soda pulp manufacturing, requesting a duplicate analysis by each method, and also by his own method, in case the chemist in question considers his superior. The methods and analytical results are then published in the official organ of the section, and the method yielding the most concordant results is recommended by the chairman. This will then be voted on by ballot by the active members of the association, four months after publication, to give opportunity for criticism. The method so adopted becomes the official method, which can be changed, however, by vote of the association, as conditions arise necessitating such change. In this way it is easily possible to have the soda process under chemical control with an increased gain in general efficiency.

A man sends in a sample to be analyzed. He then receives back the results of the analysis in duplicate. It is very simple then to look over that data and pick out the method which yielded the most important results. The results of all of these analyses and methods are published in the official organ, which here would be PAPER, the chairman recommending, from having studied out very carefully the data submitted, the method that appears to be the best. At the end of four months, then, they would decide whether this method would become the official one. The amount of work will necessarily be large, but by everyone contributing their share, the burden will not fall too heavily on anyone, and it means a closer control, and then give the chemist every opportunity and every leeway to put this thing through. The result is, of course, as far as the Leather Chemists' Association is concerned, everything has been standardized, even with a complex material, such as the ordinary tanning material or with hide substances in the way of bakes and soaks and lumps, those chemists have their official methods, and if a number of chemists follow those official methods through, they will get concordant results.

In the leather industry, the superintendents and managers have appreciated the value of such control. and have given every possible aid to the chemists in working out the problems of interest to all. The Forest Products Laboratory, of Madison, Wis., is anxious to cooperate and do its share in this movement.

In conclusion, leather, a far more complex industry from a chemical standpoint, has been standardized in regard to methods of control, and chemists are using official methods, yielding concordant results. It appears that the pulp and paper industry is lagging behind other large industries in its scientific control and advancement.

With a surety of increased competition from abroad, and advance in cost in all steps of manufacture, we might to advantage take up as part of our activity standardization of methods of routine factory control.

In opening the discussion on the paper by Dr. Kress, Chairman Fletcher said:

"Doctor Kress has recently jointed the Government's experimental laboratory at Madison, Wis., and Director Weiss of the laboratory has offered us the use of its facilities for research work. I think from now on, since Dr. Kress has joined forces with them, we will have in the Forest Products Laboratory a valuable experimental station. The Forest Products Laboratory officials are going to the mills in a different manner than the Government has ever done before. In fact, about 25 percent of Doctor Kress's time will be devoted to visiting the different mills and getting in more personal touch with the mill men, engineers, chemists and management.

"We might set aside a little time here, and now have a discussion on Doctor Kress's remarks. It is a very broad subject."

H. P. CARRUTH—I think Doctor Kress has hit the keynote of what should be the aims of this first meeting. The methods of analysis are surely fundamental, and to the end that his suggestions be used at once, I would move you that committees be appointed by the chair to investigate and report back to this body at the next annual meeting or at future meetings, on methods of analysis and control in the following five branches: The manufacture of soda pulp, the manufacture of sulphite pulp, the manufacture of sulphate pulp, the manufacture of groundwood and standard methods of testing materials used in the manufacture of paper.

CHAIRMAN FLETCHER—Mr. Carruth presents this, I understand, as a resolution. Now, it may be better for the secretary just to repeat that resolution, so that everybody will understand it. Mr. Keenan, will you repeat that resolution?

STANDING COMMITTEES

SECRETARY KEENAN—This is the resolution that Mr. Carruth handed to me for presentation. I fancy he has forgotten that I had it:

"By H. P. Carruth, seconded by D. L. Bellinger: *Resolved,* that standing committees of the Section be appointed on:

"Soda Pulp;

"Sulphite Pulp;

"Sulphate Pulp;

"Mechanical Pulp or Groundwood.

"Standard Methods of Testing Materials used in the Manufacture of Paper."

CHAIRMAN FLETCHER—How do you wish these committees appointed? Well, we had better adopt the resolution first, I suppose. All those in favor of this resolution please answer by the sign of "Aye"; those opposed "No". The motion is carried.

NEW PROVISION FOR MEMBERSHIP

SECRETARY KEENAN—I have another resolution which was handed in at the same time, Mr. Chairman.

"By W. G. MacNaughton, seconded by Max Cline: *Resolved,* That active membership in the Technical Section be not restricted to employees of the American Paper and Pulp Association."

CHAIRMAN FLETCHER—I might say in explanation of this last motion that when we organized the Technical Section we formed it on the basis of the American Paper and Pulp Association. It has developed that there are men in the country who are of great value to this Section who do not happen to be members of the American Paper and Pulp Association; for instance the men of private laboratories, the different college professors and the Government laboratories. In order to get them into the active end of it, where they could serve on the committees, we decided to change the constitution so as to permit of doing it.

All those in favor of this resolution as read please answer by saying "Aye"; all those opposed "No". The motion is carried. On these committees, Mr. Carruth, it is intended, is it not, that they be appointed by the Chair?

MR. CARRUTH—Yes.

CHAIRMAN FLETCHER—Mr. Carruth "put me wise" to this yesterday. That is the reason I can make up my mind so quickly on it. The subject was put up to us yesterday and the Executive Committee went over the names of the men whom they considered to be the best to act as chairmen of these committees. I think we have selected chairmen of these committees who have the interest of the Section at heart and who will make a go of it.

On the Soda Committee I appoint Mr. Martin L. Griffin, of the Oxford Paper Company, as chairman. Each chairman, I might say, will appoint two other members. He will be furnished with a list of the active members of the Section, and from this list he will pick out two men with whom he can work to develop these different branches.

On Sulphite Pulp, Robert B. Wolf, of the Burgess Sulphite Company; on Sulphate Pulp, Dr. Otto Kress, of the Forest Products Laboratory; on Mechanical Pulp or Groundwood, D. L. Bellinger, of Finch, Pruyn & Co.; on Standard Methods of Testing Materials Used in the Manufacture of Paper, H. P. Carruth, of the American Writing Paper Company.

Is there any other business to come before the meeting?

M. L. GRIFFIN—Mr. Chairman, I would like to say one thing in regard to the subject which has just been presented and with which I sympathize.

I understand this Section is composed of manufacturers as well as chemists, and it has more immediate concern for the manufacturers than it has for the chemists. I do not know as I can get my salary raised or lowered by what I am going to say, or by acting upon what I am going to say, but there certainly is one very important thing which manufacturers of woodpulps certainly ought to get busy with, and that is some method of determining the value of the wood they are buying. I have been very much interested in this, and I consider it a paramount issue.

The method of valuing wood by cord measure has long been antiquated, but it still exists, and there ought certainly to be a way of getting at a fair valuation of wood when it is bought, and of measuring the real contents of the wood to the pulp maker.

I remember some years ago that wood could be shipped over the railroads at so much a car, flat rate, averaging up with the haulage over the entire line. It did not make any difference whether the wood had the bark on it, whether it was waterlogged, or whether it was dry. It was, say, ten dollars a car. That time has long since passed, as you manufacturers know. Wood, whether it is wet or dry, now comes to you by weight, and you are not weighing it yourself. The railroads are putting the weights on the waybills, and it is up to you to disprove those, or otherwise pay the bills. It is my understanding that they are putting the weights up for all there is in the car, and it means a great deal of money.

Now there are various ways in which that matter could be handled, and which the manufacturers really ought to get busy with. I will only suggest a few things which look good, and the drawbacks to doing it I want to mention, because I would like to interest you still further in the matter. There are drawbacks to doing it, but there is no reason why the chemists cannot effectually value the wood, and why they cannot really suggest a method and an accurate method for buying wood. Most everything nowadays goes by weight, and as I have said, wood goes by weight over the railroads, and there is not any reason I know of, practically, why manufacturers should not buy wood by weight, if they have got to pay the freight on it by weight, and you know your product all goes by weight. You cannot bulk your product up and sell it by bulk. This is an extremely important matter. I should be glad to hear some manufacturers of pulp and paper talk to this particular point, and to hear any kind of a discussion on it. It is an extremely important matter whether you buy wood grown on a side hill or grown in a swamp, and it is an extremely important matter whether you buy hemlock or balsam fir or State of Maine spruce. It amounts to 100 or 200 pounds to the cord, just the contents of the wood itself, assuming it was bought on the right kind of basis, either volume or weight measure.

CHAIRMAN FLETCHER—I think Mr. Griffin's remarks are right to the point, and that is just the object we have had in forming these committees. We have tried to keep these committees down to a small number, figuring that when it came to the annual meeting in February, if the work developed along this line, it would keep branching all the time. There are innumerable different leads which we can take and divide up, and as we divide them up the responsibility has got to go to the individual committee and clear back through.

There is another point that came up the other day along the line of economies—the question of liability insurance as a technical subject. All mills and managers of mills throughout the country are coming, State by State, under the operation of the compensation law; the other day a gentleman called my attention to the rate on a sulphite mill as being double the rate on a paper mill, which I think will seem ridiculous to anyone who understands the risks that are run in either mill; even the rate on a groundwood mill is more than the rate on a paper mill. We intend to get some information on these subjects through Secretary Naylor, of the general association, and endeavor to put some pressure on the rate bureaus of the insurance companies in order to effect a change. If you think it over, the extra rate of a dollar per thousand dollars on the payrolls of this industry would take care of any of us. Is there any more new business to come up?

MR. OBERMANNS—Mr. Chairman, I realize this is a big problem, but I would move the Chair to appoint a committee to look into the practicability of starting a bibliography the same as I outlined in my paper. I know such a work would be of

Continued on page 38

Paper Fiber Analysis[1]

Possibilities of Accurate Determination of Groundwood in Paper

By MAX CLINE

Chemist, Bureau of Tests, International Paper Company, Glens Falls, N. Y.

IT seems hardly necessary to present to this audience the value of an accurate determination of groundwood in paper, and I beg your indulgence for a few minutes while I consider this phase of the subject in order to show that it is worth the analyst's time and work to be as precise and careful in this determination as possible.

The manufacturer of the ordinary grades of paper finds that his business is becoming highly competitive, with production increasing faster than the demand. Often he finds that he has to change his production from one grade to another in order to run at a profit. It is very important for him to know, as exactly as possible, the composition of the various grades of paper on the market which he might be able to manufacture. The mechanical qualities of some of the papers, through years of progressive manufacture, are remarkably high for their market value, and that such papers can be made from the stock found in them seems impossible, until a careful study is made as to correction of stock and mechanical adjustments in the plant. Being certain of the stock composition of the paper he desires to make, the manufacturer can devote his entire attention to making the plant adjustments necessary to meet his problem. Uncertainty in the stock composition of the paper complicates the problem; moreover every 1 percent replacement of unbleached sulphite by groundwood means a saving of 20c a ton, the same change for bleached stock effecting a saving of 40c a ton; while a replacement of 5 percent might make the whole difference as to profit or loss in the manufacture of that particular paper.

In the hands of the skilful manufacturer, groundwood has changed from the simple wood filler of former days to the flexible product of the present. By wood selection, variation in grinding, in screening, in bleaching, the quality of the mechanical pulp is greatly modified so that it answers a variety of purposes in changing the quality of the paper in which it is furnished, with the result that it is going more and more into grades of paper deemed impossible years ago. It is of the utmost importance for the manufacturer of the cheaper grades of paper to know what can be done with groundwood, and he is not fully informed until he has had submitted to him careful analyses of the paper made by his competitors.

The consumer of paper still holds to the old prejudice of regarding groundwood as a necessary evil—an ingredient to be furnished in his paper only to the extent of lowering his own costs. He fails to understand, or forgets often, that certain highly desirable qualities as to formation, feel, and finish, in his paper can only be attained by the liberal use of groundwood, and that to substitute other stock for groundwood to give him the qualities of the paper demanded would make the cost prohibitive. When the quality of the paper does not come up to expectation he is inclined to be too ready to jump to the conclusion that a greater furnish of groundwood in the paper was made than he specified. To verify his suspicion he submits a sample of the paper to his chemist or consulting chemist for analysis, and it is of the gravest importance to all concerned that this work be done with as great accuracy as our present scientific knowledge will permit.

What then can the paper mill chemist or the consulting chemist do to meet this want of the manufacturer or consumer of paper?

As an illustration let us take a recent case of the fiber analysis of two samples of paper by four laboratories:

	Sample 1 Groundwood	Sample 2 Groundwood
Laboratory A	50%	45%
" B	31%	29%
" C	35%	40%
" D	30%	25%

Showing a maximal variation of 40 percent in the analyses.

Only two, B and D, check each other fairly well on both samples, C checks B and D on sample 1, and A on sample 2. Considering that one laboratory is of national prominence as catering to the pulp and paper trade, that another is that of a large manufacturer of groundwood papers with considerable experience in the analysis of such papers; a third, the paper laboratory of a large dyestuffs concern, composed of men having a considerable training in fiber analysis; and a fourth, that of men having an international reputation as cellulose experts, it seems that they should all have agreed quite closely. No doubt, under present conditions, most analysts would not agree more closely on fiber determination than A B C or A C D.

Two questions arise. Is this the best that can be expected, and if not, should we remain satisfied with poor work? In answering these questions let us briefly examine the methods available for groundwood determinations in paper.

Broadly the methods divide themselves into three general procedures:

(1) Color reactions due to staining of the paper with reagents of which the most preferred are phloroglucinol, aniline sulphate and dimethyl-para-phenylenediamine.

(2) Microchemical examination of the fibers with the help of staining solutions, such as iodine or iodo-zinc-chlor solution.

(3) Chemical procedures, such as the determination of the phloroglucinol absorption number or the cellulose determination of the sample in question.

The first, or staining, method of the sample of paper with reagents is very useful as a qualitative test for the presence of groundwood in papers containing bleached or well cooked wood celluloses. When there is a possibility of the presence of lignified wood cellulose, such as rather raw unbleached sulphite or kraft pulp, this test should be confirmed by microscopical examination.

Superficial staining of paper, such as Wurster's color reactions, has been proposed for the quantitative determination of groundwood, and to make the procedures more simple and rapid, color charts are offered to the paper analyst with the advice that all he has to do is to put a drop of the reagent on the sample he is examining and compare with chart. This may be satisfactory for ideal mixtures of stock of ideal quality, but the result in practice is about as happy as comparing the average person with the fashion plates as pictured in the popular magazines.

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[1] Read before the Technical Section of the American Paper and Pulp Association at the meeting in Grand Central Palace, New York, September 23, 1915.

A moment's consideration will show that the depth of stain depends on the quality of the reagent and its age, the time in which the reagent is allowed to act, and the quality of the different pulps in the paper, besides the percent composition of the same. It is hopeless even to expect a crude approximation of the percentage of groundwood to be determined in paper by this method unless the analyst makes a series of hand samples of paper containing varying amounts of groundwood and wood celluloses of as near the quality contained in the sample as possible. The examiner will also find that the variation in the depth of stain developed by varying quantities of groundwood is not delicate enough for papers containing large amounts of groundwood. At the best the quantitative results are highly unsatisfactory and as a microscope has to be used anyway, it is just as well to employ a microchemical method in the first place and get much more satisfactory results.

This leads us to the second or microchemical method for the determination of groundwood in paper. It is needless to go into a description of the procedure or of the stains that are used. Every book on papermaking repeats the procedure and a few enter into lengthy descriptions of microchemical analysis of fiber. The whole procedure appears very simple, the amount of skill required for the manipulation of the microscope for fiber analysis being so slight that even the rawest tyro at analytical work faces the task boldly. So charmingly easy does microchemical analysis of fiber appear that the operator forgets or overlooks the quiet observation of the cellulose experts, embraced in the remark that "the degree of accuracy attainable depends first upon the kind of mixture under examination, and secondly, upon the experience of the observer."

Many a laboratory considers the procedure too simple for an analyst to take time to prepare fiber slides for examination and leaves it to a laboratory helper. As some laboratory helpers are not strongly imbued with the chemist's regard for analytical cleanliness, a boomerang occasionally leaves such a laboratory in a report on a certain percentage of rag stock in paper made at a mill that never lifted its eyes above unbleached sulphite. Nor does the suggestion from some kind friend that possibly the beaterman lost his overalls or handkerchief in the engine help the embarrassed laboratory.

Another pitfall that a laboratory may and often does get into, is to have its whole force or a good part of it pass judgment on a fiber analysis by microchemical examination. This is based on the theory that the voice of the multitude is righteous and the opinion of the many is correct. Unfortunately this does not work out in practice. Whether in politics or microchemical fiber analysis, the average opinion of mere numbers is not necessarily correct or accurate, especially if it has within itself the judgment of the careless, the thoughtless, and the unprepared. To ask a man who is, let us say, engaged in a carbon determination on a sample of steel, or who is analyzing a bronze, to drop his work as soon as convenient and spend a few minutes in examining one or more fiber slides and to record his vote is not fair to the subject. This man may not have seen a fiber slide in two days or even a week. His mind is, or ought to be, charged with the work which occupies most of his time. He will approach the microscope with a clouded vision and will neglect the many niceties which are vital for careful work.

He will take it for granted that the sample was defiberized properly and that the microscopic slide, or slides, gives a correct picture of the average fiber composition of the sample, which, as already noted, sometimes leads to very absurd reports. He may overlook the point that the stain is not working properly, that the fields vary greatly in composition and he may be too impatient to examine a large enough number of fields to get an accurate analysis. Or if the observer is conscientious enough to examine known standards for comparison, he may neglect to note that some allowance should be made for the variation in treatment of the stock in the unknown from the standards, or that the comparison is not exactly fair, as the unknown may contain rather raw sulphite with groundwood, while the standards are made up of mixtures of well cooked unbleached sulphite and groundwood. Inexperienced men will obtain wide variations in test results, and a sample may be reported as containing 25, 50 or 75 percent groundwood, or *about* 25, 50 or 75 percent groundwood. This may account for men often checking each other quite well and still be far from strict accuracy of determination.

As a rule, the opinion of one thoroughly trained, patient and thoughtful fiber analyst is more correct after, let us say, half an hour's work on a microchemical fiber examination than the average judgment of six inexpert men who have collectively spent three hours on the test.

Another fallacy peculiar to analysts is to report percentage of stock by counting the fibers. A moment's consideration will show that this can only hold true if the groundwood contain just as many fibers, shreds of fiber, and bundles of fiber per pound of stock as the cellulose contained fibers and parts of fiber and that it is absurd to expect such close agreement in pulps so utterly unlike in composition and method or preparation as groundwood and the celluloses.

I hope that I have shown you that consistent accuracy in microchemical fiber analysis is far from easy —that it requires experience, patience and good judgment; that a large number of standards made from paper similar to those under investigation should be employed, i. e., standards made up of the same quality cellulose pulp which had been treated and refined in as near the same way as the stock in the unknown sample.

Microchemical fiber analysis is very rapid, and it is this which makes it so popular for groundwood determinations, but it is in reality much more difficult to get accurate results by this method than by the more complicated and more time-consuming chemical methods.

The chemical methods take cognizance of the fact that groundwood or mechanical woodpulp is altogether different from the wood celluloses or any other cellulose, being composed of the complicated lignocellulose and so reacts chemically different.

The phloroglucinol absorption method first proposed by Cross, Bevan and Sindall was found by us to be a very useful and accurate procedure for groundwood determinations. It is true that it takes at least fifteen hours to get the result; the titration of excess phloroglucinol with formaldehyde is rather tedious and the reagent has to be freshly prepared for each test, as it does not keep well. Furthermore, in accurate work, the absorption number of the stock with which the sample of paper was made should be determined at the same time, or, failing that, the absorption number of standard pulps, of as near the same lignin content as the stock in the sample, should be found. It is also necessary to determine the nonfibrous constituents of the sample.

The analyst who takes these precautions is well rewarded for his pains. The greatest accuracy of the microchemical methods is easily excelled by this method. Accuracy to 1 and 2 percent groundwood is often obtained in simple mixtures of two pulps. At the Bureau of Tests, of the International Paper Company, we have the opportunity of testing this method on paper of known furnish of mixtures of groundwood and sulphite and are well satisfied with its consistent accuracy.

Another chemical method that is applicable and gives good results is to determine the cellulose content of the sample by any good method such as the chlorination method. By determining the cellulose content of the mechanical woodpulp and the chemical woodpulps we obtain a proportion from which the percentage of groundwood in the sample may be calculated. This method has been found to check the phloroglucinol method very well in the few cases we have tried it in using both methods.

As an example we recently analyzed a sample of paper which had a phloroglucinol absorption number of 3.4, the groundwood from which it was made gave 7.2 and the unbleached sulphite 1.8; this gives us 29.6 percent groundwood on the bone-dry, ash-free, size-free basis. At the same time we found that the sample contained 76.2 percent cellulose, the groundwood pulp 55.7 percent, and the unbleached sulphite 84.5 percent, which gives us 29.0 percent groundwood.

With such possibilities from the chemical methods it is not reasonable for analysts to rely entirely on the microchemical method, as many now do. Where quick results are wanted and an approximate determination satisfactory, the microchemical method can be used exclusively. But where accuracy is the aim no pains should be avoided to make the analysis as careful as possible.

It would be useful for the Technical Section of the American Paper and Pulp Association to adopt a standard method for fiber determination and thus avoid the existing confusion and sources of dispute in the trade.

National Exposition of Chemical Industries

Exhibits of Interest to Papermakers—Technical Section Booth a Centre of Attraction

ONE of the most important and educative of the series of industrial expositions that have been held in this country, the National Exposition of Chemical Industries, at the Grand Central Palace, New York, open from September 20 to 25, proved exceedingly interesting, not only to those possessing a knowledge of chemistry, but to the lay public. The attendance, from first to last, was not only large, but displayed an intelligent interest in the objects presented, that must have been exceedingly gratifying to the exhibitors.

The great exhibition hall was well filled with attractively displayed, and for the most part, timely exhibits, the general arrangements, under the direction of Adriaan Nagelvoort and Charles F. Roth, were beyond cavil, while the well lighted, spacious hall and excellent music made the exhibition a pleasant place to visit.

For the papermaker there was much to be seen of interest and value, as might be expected, considering the important part chemistry plays in papermaking. Some of the exhibits, however, appealed more directly to the papermaker than others and of these we will make brief mention.

The booth (No. 26) of the Technical Section of the American Paper and Pulp Association, was, of course, the first objective of visiting members of the industry. Here they were afforded an opportunity to register, to meet colleagues, receive mail, rest and recuperate. Some handsome views of papermaking plants, a display of woodpulp and fibers, kindly loaned by friends of the Section, and a collection of samples of the papers produced and used in foreign countries made by the consuls of the United States and loaned by the Bureau of Foreign and Domestic Commerce, imparted an artistic and vocational character to the booth. Here, during the period for which the exhibition was open, visitors, members of the paper manufacturing and allied trades, registered their names.

An active interest in the exhibition was manifested by the Federal Government, and several of its departments and bureaus made attractive and interesting displays. Among those represented were the Geological Survey, showing by charts, transparencies, mineral specimens, etc., the natural resources of the country available as raw material, for the manufacturing chemist; the Bureau of Mines, which included a demonstration of the Rittmann process, whereby gasoline, benzol and toluol are made from valueless petroleum residue; research information concerning the commercially valuable clays of the South, etc.

The most interesting feature of the exhibit of the Forest Service Bureau was the display of brilliant yellow dyestuff, obtained from the osage orange (*Toxylon pomiferum*) which grows in profusion in the Southwest and which in the present period of dyestuff scarcity may be a valuable addition to our tinctorial resources. Interesting exhibits were also made of woods suitable for conversion into pulp, by this bureau.

The Bureau of Animal Industry had an exhibit illustrative of the manufacture of casein.

The Bureau of Census, the Bureau of Standards and the Bureau of Foreign and Domestic Commerce, also had interesting and instructive exhibits relating to subjects that enter, more or less directly, into the paper manufacturing industry.

A feature of the Government exhibits was the liberal provision of reports and public documents, bearing on the chemical industries, which were freely disributed to interested applicants, some of them having a more or less direct bearing on the paper and pulp industries.

To the average paper manufacturer, however, the most interesting exhibits were those by which were revealed American progress in the production of colorants and dyestuffs, the supply of which has been curtailed to such an embarrassing extent by the state of war in Europe. In this field were many exhibits of peculiar interest and importance.

The display of the Heller & Merz Company, of Newark, N. J., for instance, comprised an assortment of colors and the intermediates derived from coke refuse distillate from which they are produced, for which, prior to the war, we were dependent almost wholly on foreign sources. In this country, the coal tar residues were either wasted or very imperfectly utilized. Necessity compelled the American manufacturer to turn his attention to their more perfect utilization and the result is the display of American colorants made by this and other firms for. A conspicuous feature of this firm's exhibit was a pile of American ultramarine, with the raw material from which it is produced.

The National Aniline and Chemical Company, New York, representing the Schoellkopf Aniline and Chemical Works, Buffalo, also made a fine display of colorants.

Stamford Manufacturing Company, Stamford, Conn., ex-

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PAPER

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Accomplishments of the Technical Section

THE account of the Technical Section meeting which occupies so much space in this week's issue of Paper is deserving of a careful reading on the part of every paper manufacturer who desires to hasten the day of scientific and technical perfection in papermaking. No more promising development in the industry has made its appearance of late years than the work of the men identified with the activities of the Technical Section, and it is a pleasure to note that full encouragement of the movement has been accorded by the leading manufacturers, both in and out of the American Paper and Pulp Association. This was demonstrated by the attendance at the first meeting, held at New York last week in connection with the National Exposition of Chemical Industries, of a large number of men employed in a technical capacity in the mills, who were granted leave of absence for the purpose.

The meeting resulted in some notable contributions to the technical literature of papermaking, all of which will eventually be published in Paper, which is the official journal of the Technical Section. Of equal importance among the accomplishments of the meeting was the naming of committees headed by expert technologists for the study of standard tests and methods of analysis, such as were outlined in the article contributed by Dr. Otto Kress, of the Forest Products Laboratory, to the September 15 issue of Paper.

It was a wise step on the part of the Executive Committee to let down the bars against active membership in the Technical Section, and make it possible for technical men to have a voice and vote in its affairs without regard to the membership or nonmembership of their employers in the American Paper and Pulp Association. This opens the way for an active participation in the affairs of the Section of men employed in the Federal testing bureaus, members of the teaching staffs of universities having departments of chemical engineering where scientific papermaking is taught, and of engineers, who are members of a profession that has contributed more perhaps to the development of modern pulp and papermaking than any other branch of scientific endeavor.

A review of the accomplishments of the Technical Section since its organization a few months ago might be attempted here, but considerations of space make this difficult, and it may be best to let the interested reader turn to the instalment of the report of the meeting which is given elsewhere in this issue of Paper, and judge for himself. The Section seems to be established on a firm basis under good management, and promises to be a weighty factor in the future development of the American paper and pulp industry.

Employer and Employee

A GREAT DEAL is said and written of the business and economic relations existing between the employer and employee, but what seems to be equally important, the personal relations, receive scant consideration. It is our opinion, as it long has been, that very many of the conflicts between labor and capital might be entirely avoided and others materially minimized if the wage-earner and his employer could come to know each other better.

Difficulties are well on their way to adjustment when the parties to the conflict become thoroughly acquainted. Nothing goes quite so far toward bringing divergent minds together as personal contact of the contending individuals who have come together with the sincere purpose of fair and friendly dealing. This is the experience of the world in every phase of life. Our misunderstandings in very many instances are due entirely to the dimness of a long distance vision. It seems to be a trait of human nature to observe ones fault at long range and to see the good qualities only when we are brought close together. The result is that biased and unwarranted impressions are made, and then our prejudices keep us apart, prolonging and intensifying our struggles.

How often it has happened in the business experiences of men that disputes which appeared to be beyond adjustment have melted away and the most cordial relations have been established between the parties when they have been brought close together. Fifteen minutes heart to heart talk between honest men can accomplish more than a year's correspondence or long distance 'phoning.

What is true in other relations is just as true in respect to the employer and employee. Unfortunately for many years the great majority of these have been lined up against each other upon the assumption that they are enemies instead of friends, and that they must fight against each other instead of for each other. So firmly fixed has this impression become that the constant attitude of the man who hires labor and the man who labors is one of suspicion and contention. It should not be so.

When the matter is called to the attention of the employer he usually answers that labor is so unreasonable that you cannot deal with it upon friendly terms, but must stand up for your rights and demand them without making any concessions whatever. Labor says the same thing of capital. And in many cases both are right. Greed and selfishness and unreasonableness are not confined to either one. Moreover, it is our conviction that neither the employer nor employee is as unreasonable or selfish as he appears to be when viewed from a distance. Both are human and both are open to conviction when properly approached.

Even if it be true that labor or that capital is entirely selfish and unreasonable, still it is good policy to break through that line of defense, which can best be accomplished by the use of humane weapons. Honesty and square dealing mixed with a little generosity will do more to establish agreeable and profitable relations, even with selfish people, than anything else.

It does not pay to be continually fighting for what we believe to be our rights if they may be substantially obtained by other methods. Men are as a rule in business not for their health, but for the returns which may come to them as a result of their enterprise. That being the case, the easiest way to overcome our differences is the most profitable one. Strikes and lockouts and labor quarrels put no money into the pockets of anybody, but very quickly exhaust the resources of both the employer and employee. If the sum total of the losses which have come to capital and labor on account of their failure to agree, which means their failure to be reasonable, were accurately estimated and placed before the world, the figures would astound us. And yet we keep on the same old way.

Negotiations looking to the establishment of closer relations and better understandings can best be had by the parties directly interested and not by proxy. This may be well illustrated by the celebrated case of the Colorado Fuel & Iron Company, which has been in a state of war with its employees for many, many months. It has resulted in enormous losses to the company and in sacrifices and privations to the wage-earners and their families which cannot readily be computed. The strife had become more and more bitter, until it seemed a struggle to the death but for the interference of Governmental authorities.

Very recently it occurred to the principal owner of this property, John D. Rockefeller, Jr., that it might be well to visit the locality of the Colorado mines and make a personal examination of the conditions. At this late day he did what he should have done long ago and what would have saved endless trouble, had he set about it earlier; he went among the miners, lived in their camps, went with them down into the dark recesses of the earth, and with his own eyes beheld the conditions under which they labored, and under which they and their families lived. For the time being he became one of them and became intensely interested in their affairs, as they likewise became interested in him. It required but a few days for him to establish the most cordial relations with these same people who had been breathing their curses against him and his associates, and the same people that he had been taught to believe were inhuman and heartless. Their economic problems it is true have not all been solved, but the solution has been made possible by this initial step, and a settlement will doubtless be accomplished as the result.

Mr. Rockefeller, in commenting on the situation, makes this observation: "The average man I find, whether rich or poor, employer or employee, usually is satisfied when he feels that he is getting a square deal."

With obvious wisdom he likewise says: "It is fallacy to suppose that any business can survive with the man who receives the pay envelope working for his own interests solely, and the man who fills the pay enevolpe doing likewise; both pulling in the opposite direction." He is convinced that their interests are common and that they can, if they will, work together to their mutual advantage.

When labor recognizes the right of capital in normal times to yield a proper return, and when capital recognizes the right of labor to an adequate wage and humane conditions, it will not be difficult to adjust the basis of employment. Neither one can except this consideration from the other unless it manifests the same spirit toward the other. And this cannot be accomplished except by personal acquaintance and personal contact.

There is at the present time a great deal of talk about coming labor troubles owing to the diminished supply of labor as a result of the cutting off of immigration and of the return to European countries of many who have been working in America. Many of those who forecast difficulty appear to be laying their plans for a struggle and are evidently thinking of how they may best equip themselves for the fight. It is a mistaken policy. There are many indications of labor problems ahead of us. The best way to meet them in our opinion is first of all to meet each other—get acquainted, become interested in each other. Not only be reasonable, but get close enough to let your reasonableness be seen. Establish friendly relations rather than estrangements. Become neighborly and let it be known that your policy and purpose is to work with others for your mutual benefit. If this be done, many of the troubles which we are expecting and dreading will never be realized.

National Exposition of Chemical Industries

Continued from page 21

hibited vegetable dyes and extracts of logwood, fustic, lima wood or red wood and the raw materials. These dyes, it is asserted, are used by papermakers with the best results.

Toch Brothers, New York, made a fine exhibit of paints, varnishes, etc., as well as several kinds of acid-proof paint and blanc fixe, in powder and paste form.

Other exhibits of colorants and dyestuffs were made by W. Becker's Aniline and Chemical Works, Brooklyn, who displayed in series the raw material, the intermediate and the finished color; the Standard Aniline Products Company, New York, the Benzol Products Company, New York, whose exhibit consisted principally of the intermediates derived from benzol, from which the colors could be produced, and the E. I. DuPont de Nemours Company, who showed various colors. In this class may also be mentioned the Durex Chemical Works, New York, whose display included the various products of barium salts used by papermakers—blanc fixe, alumina hydrate and gloss white.

The Duriron Casting Company, Dayton, Ohio, showed specimens of their acid and alkali resistant castings. A faucet plug of thin metal, used for upwards of two years for 25 percent sulphuric acid, shows no sign of corrosion. They also showed a centrifugal pump for handling alkaline or acid fluids, made of "duriron."

The exhibit of the Argro Dampproofing Company, New York, included various articles and receptacles, rendered moisture, acid, rust and alkali proof, by the treatment with their "Mogul" which resists the most powerful acids and can be applied to all substances.

The Bethlehem Foundry and Machine Company, South Bethlehem, Pa., had a unique display, demonstrating the acid-proof character of their castings. A 1 to 3 solution of nitric acid was allowed to drip steadily onto two iron discs, one of Bethlehem, the other of ordinary gray iron. While the former remained unaffected, the latter was so corroded as to be practically disintegrated.

The Dorr Cyanide Machinery Company, Denver, Colo., demonstrated in their working exhibit, the mechanical principle of an apparatus for continuously causticizing soda-ash with lime, using a continuous agitator and continuous counter-current decantation, in Dorr agitators and Dorr continous thickeners. With a motor of a quarter horsepower, four thirty-inch thickeners, three twelve-inch agitators and five small pumps were operated. The apparatus is particularly recommended to soda pulp manufacturers as effecting the continuous causticization of soda-ash with lime to produce, at lowest operative cost, the largest yield of caustic soda.

Eimer & Amend, New York, showed the Freas Electric Conditioning Oven for determining the amount of moisture in textile fabrics, paper, etc., also for chemical processes.

Werner & Pfleiderer, Saginaw, Mich., had an exhibit of blue prints, photographs, etc., by means of which, F. H. Banbury, Park Row, New York, their representative, explained to interested paper manufacturers their "Universal" paper pulping machine and "Rapio" dissolver, which, without the use of steam, effects the rapid solution of calcium chloride and other mineral substances.

The Glens Falls Machine Works, Glens Falls, N. Y., exhibited a working size Tromblee & Paull sulphur burner equipped for operation by direct electric motor. They also distributed literature regarding their Rogers Wet Machine for chemical pulp, Moore Rotary Screen for groundwood and other specialties for pulp manufacturers.

F. C. Huyck & Sons, Albany, N. Y., had a display of drying felts and jackets, filtering cloths, etc., that was a source of much interest to paper manufacturers. One of the felts included in their exhibit was an immense felt belt for a news-print machine, sixty-five feet in length, 193 inches wide and weighing about 200 pounds.

A one-ton Vesusvius Sulphur Burner, illuminated inside to show its construction, was the attractive exhibit of the Valley Iron Works, Appleton, Wis., for which, with several others of the same make, they found purchasers during the exhibition. They build similar burners up to nine tons capacity. Mr. Peterson received visitors and was assisted by Ralph Fannon, of Appleton, Wis.

Iron and steel pipe connections, valves, etc., lined with lead, for carrying acids were exhibited by the Lead Lined Iron Pipe Company, Wakefield, Mass.

Several sizes of their evaporators, used by pulp mills for the concentration of sulphite waste black liquor, etc., were shown by the Swenson Evaporator Company, Chicago, Ill.

An interesting display was that of the Electrical Precipitation Plant, with the aid of which the solid particles in smoke vapors, fumes, etc., can be precipitated and collected, thus rendering them inoffensive. A thick smoke was caused to ascend from a chimney and on turning on the current it at once disappeared, to reappear as soon as the electricity was shut off. It is asserted that this apparatus will obviate the offensive character of the fumes arising from sulphite plants. It is in addition recommended as an effective preventive of smoke.

The recovery of trade waste is the purpose of a special line of machinery of which Ernest Scott & Company, Fall River, Mass., are manufacturers. Their exhibit was planned to demonstrate the efficiency with which this is effected by their apparatus.

We have selected the foregoing from a total of upwards of 100 exhibits, as of particular interest to paper and pulp manufacturers. It is, however, only proper to state that every exhibit possessed meritorious features.

Prosecution Rests in Strike Trial

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 28—The prosecution rested Friday noon in the matter of the preliminary examination of the thirty-six Deferiet strikers of the St. Regis Paper Company, which has been in progress all of the past week before City Judge Joseph A. McConnell, of this city, in police court. In the afternoon of the same day the defense opened its case. which it is expected will be concluded some time today, Tuesday. Former District Attorney Fred B. Pitcher is representing the District Attorney's office and Attorney T. Arthur Hendricks, of this city, is representing the defense.

The thirty-six strikers are charged with having violated sections 2090 and 2091 of the penal laws of the State for rioting and inciting a riot on the night of September 2 at Deferiet, when the strike was renewed in that and other paper mills in this section. None of the evidence thus far presented against the men arrested for the deeds of that night is strong and Attorney Hendricks succeeded in getting six of the men discharged immediately after the defense opened

BLACK RIVER.

Seek to Extend Operation of Weeks Law

[SPECIAL TO PAPER]

WASHINGTON, D. C., Sept. 28—Members of forestry associations and chambers of commerce in New England and the Southern Appalachian States, acting in cooperation with the American Forestry Association, last Thursday held a conference with Secretary of Agriculture Houston regarding the extension of the Weeks law appropriation for the purchase of Federal Forest Reserves on navigable streams and cooperation with States in protecting the forests from fires. The money appropriated five years ago by Congress for the purpose of acquiring Federal forest reserves and aiding the States in forest fire protection will be fully exhausted at the end of the present fiscal year, and the American Forestry Association, and cooperation bodies, are endeavoring to have the appropriation continued, at the rate of $2,000,000 a year for the next five years.

The conference with Secretary Houston was to present to him facts and arguments showing the necessity of continuing the work done under the Weeks law. Dr. Henry S. Brinker, president of Lehigh University and president of the American Forestry Association acted as spokesman and presented to Secretary Houston a formal request, signed by all the members of the delegation, that the importance of continuing the work and securing a further appropriation to carry it on be brought to the attention of the President and Congress.

WHY NOT TO-DAY?

IF you have heard about TALCLAY—how it is taking the place of Domestic and Imported China Clays in every department of paper manufacturing—

If you already know about its SUPERIORITY over various Talcs produced in this country —how it saves money for its user by its FREEDOM FROM GRIT AND MICA—GREATER RETENTION—etc.—

If you could see the extreme care we exercise in endeavoring to make our product the BEST on the market—how we are very particular to have the Pure Rock furnished by our mines ground and prepared in such manner that when our customers receive it they get a SELECT CLASS OF GOODS—

If you find that our prices were not prohibitive when the grade of material, the reputation it has succeeded in attaining, and the results it produces are considered—

THEN, WILL YOU CONSIDER THE USE OF "TALCLAY" TODAY?

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This product is GUARANTEED UNIFORM, always. It will be found FREE OF GRIT and MICA. It has NO MOISTURE. It gives LARGER RETENTION. It REDUCES WIRE and MACHINE EXPENSE and CUTS MANUFACTURING COSTS.

Economy in the manufactured sheet is the characteristic which insures its welcome into hundreds of paper mills TODAY!

If you want to know more about TALCLAY—desire a sample of finished product, also one of crude TALCLAY rock—desire to know who uses this material and what they say about it, a postal or letter will receive prompt attention and the required information. We'll even send you a quantity for trial—FREE OF ANY CHARGE—if you wish. May we?

I-N-V-E-S-T-I-G-A-T-E

The St. Lawrence Talc Co., Inc.

P. O. Box 171 **Natural Bridge, N. Y.**

THE WEEK'S LATEST TRADE NEWS

Fred W. Burbank Out of I. P. Co.

Fred W. Burbank has resigned from his position in the sales department of the International Paper Company, where he has been for seventeen years, and after taking a rest, is planning a business venture of his own.

St. Regis Paper Company Has New Manager

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 28—E. E. Whitney recently assumed his duties as assistant general manager of the St. Regis Paper Company, to which he has been appointed. Mr. Whitney prior to coming here was connected with the Beaver Board Company, at Rochester. He is a mechanical engineer and research man, and will undoubtedly look after the mechanical department of the St. Regis, which has had no assistant manager for some time.

For several years during the time that D. M. Anderson was general manager of the company, J. Victor Baron was assistant. Last year when Mr. Anderson severed his connection with the St. Regis, Mr. Baron took up the duties of general manager, and looked after the plant until he became the secretary and treasurer of the Taggarts Paper Company. Some time after that L. B. Steward was employed as general manager of the St. Regis. BLACK RIVER.

Big Legal Battle On At Watertown

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 28—Two actions of Knowlton Brothers Paper Company, of this city, against the New York Air Brake Company are on the calendar of the Appellate Division of the Supreme Court for argument. These involve riparian rights about Beebee's Island and the Mill street dam. All of the powerowners about this island are grouped into two factions, one of which is headed by Knowlton Brothers and the other by the New York Air Brake Company and the relations between the two are sorely strained—so much so in fact that a few days ago when an effort was made to get them all together to form a power association, they could not come to an agreement on the method of voting.

According to what is known as the Dorwin agreement of 1869, each powerowner represented a certain number of shares according to the amount of power he owned. The New York Air Brake Company, which represents more of these shares than any of the other powerowners about the island, contended through its attorney, Senator Elon R. Brown, that the voting should be done by shares. Knowlton Brothers and the Northern New York Utilities, Inc., contended that the voting should be done by parties and was backed up by the majority of the other powerowners. Senator Brown, however, refused to recognize the rulings of the chair in the temporary meeting and withdrew his forces to one corner of the room and held a sort of rump meeting of his own. Both meetings adjourned to different dates to perfect their organizations and before the date arrived for the Brake meeting, Knowlton Brothers served an injunction restraining the Brake meeting from going ahead with it. This is one of the matters that will come before the Appellate Division. Another is that of the injunction obtained by Knowlton Brothers restraining the Brake Company from going ahead with its power development project at the head of Beebee's Island. BLACK RIVER

The American Writing Paper Company is about to start up a 550 horsepower Westinghouse motor at the Platner & Porter Division plant, at Unionsville, Conn. This motor will obtain power from the local electric light company, and will be used to supplement their waterpower.

Strike Conditions in Northern New York

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Sept. 28—The renewed strike at the plants of the St. Regis, Remington, West End, Champion, Donnacona and Continental paper companies is now going on its fourth week and there are yet no indications of weakening on either side. There have been no demonstrations of any kind on the part of the strikers, since the last disturbance, but the sheriff still has about fifty deputies and half a company of militia guarding the Deferiet plant.

The strikers continue to keep their pickets on duty and declare that they will fight to a finish. On the other hand the manufacturers are getting in nonunion men all of the time and declare that they will never have any dealings with the strikers again.

What the next move of the strikers will be is not known. With the exception of two weeks they have been out of work twenty-two weeks and their personal finances have become depleted. Many of them have been living in tents all summer and have no homes. Cold weather is already here and winter is staring them in the face. Unless they can change defeat into a victory within a short time, they will be compelled to seek work elsewhere or face starvation.

BLACK RIVER.

Apprentices in Paper Mills

[SPECIAL TO PAPER]

GREEN BAY, Wis., Sept. 28—In an effort to increase the number of apprentices in the paper mills of the State of Wisconsin a special investigation committee of superintendents of the Continuation schools, of the Fox river valley district, proposes to have the child labor law revised so that boys sixteen years of age may be apprenticed in the paper mills.

A report on the result of the investigations by the committee, which consisted of Superintendents E. E. Gunn, jr., of Green Bay, Van Dalsem, of Neenah, and Faulkes, of Appleton, was submitted and adopted at a conference held Saturday at Appleton. The resolutions stipulate that the employers of boys sixteen years of age shall have the same protection under the workmen's compensation law as is now the case with employers of boys eighteen years of age. The resolutions will be forwarded to the industrial commission in an effort to have the support of that body in changing the law so that boys from sixteen years up may be employed in paper mills.

Following is the text of the resolutions as adopted:

"Whereas, boys leaving school at sixteen years of age ought to be definitely located as industrial workers, and

"Whereas, boys thus leaving school and not being definitely located are subjected to serious demoralizing influences which often render them unfit for later employment, and

"Whereas, in some industries, notably the paper industry, certain machines run continuously day and night, and must be cleaned and oiled while in motion, and employers in such industries feel unsafe in employing boys under eighteen years of age because of the restrictions of the Child Labor Law, and

"Whereas, it is advantageous to all concerned that a boy's period of apprenticeship begin at the age of sixteen years rather than at the age of eighteen years.

"*Be It Resolved* by the undersigned committee appointed to make arrangements for this conference, that the Child Labor Law should be revised so that boys sixteen years of age may be apprenticed in such industries and that employers of such boys shall be protected by the Workmen's Compensation Act, as is now the case with employers of boys eighteen years of age."

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San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

Large Increases in Sale of Paper

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 28—Some figures respecting the state of the paper business in Wisconsin have come to the attention of your correspondent which seem convincing and interesting. These figures cover the number of cars of paper of all kinds, shipped from the mills of this State, and are compiled from authoritative traffic sources, so that there is no chance of their being in error.

Without particularizing, as might be done, the exact number of cars shipped, it may be said that the records show that during the month of August of this year 3 percent more cars of paper were shipped from Wisconsin mills than during the month of August, 1914. The significance of this will be appreciated when it is remembered that the month of August, 1914, was a month during which the paper business showed an extraordinary burst of activity, due to the beginning of the European war. For several weeks after war was declared consumers fairly raced to buy paper, and August's business that year of course reflected it. If the number of cars of paper shipped in August of 1915 had held even with the number of cars shipped in August, 1914, it would, under these circumstances, have been a most encouraging indication. The fact that this year's number slightly exceeds last year's leaves no room for doubt that this year's normal demand is at least as great as was last year's extraordinary demand, during the corresponding month.

One Appleton mill making sulphite bonds sent out letters last week to the trade withdrawing quotations previously made on its products. Principally on its colored papers, it is finding it necessary (and possible)to advance prices, due to the "binding" nature of the color situation. In spite of reports in the dispatches that American plants are making aniline colors, there seems to be little evidence of it, so far as the paper manufacturers are able to find out.

Water Plentiful in Wisconsin

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 28—In waterpower as in other things, it is frequently "a feast or a famine," and just now this locality is getting confirmation of the truth of it. Only three or four weeks ago the use of water for power had been cut down to less than half the normal flow. Now, beginning last week, not only are the mills drawing all they want, but a couple of the sluices in the Menasha dam have been opened, and water is being wasted from Lake Winnebago as during the spring freshet. It looks as though the mills from now on would have all the water they could ask for.

ANOTHER COATING MACHINE ORDERED

The Appleton Coated Paper Company has ordered another coating machine, which is expected to be installed about the first of January. This will be a "double coater," coating both sides of the paper at the same operation. The addition of this new equipment will permit the company to give its customers even better service than at present .

Plans for Writing Paper Association

[SPECIAL TO PAPER]

DAYTON, O., Sept. 28—Plans are being arranged for the convention of the Writing Paper Manufacturers' Association, to take place here some time next month. The Greater Dayton Association, corresponding to the Chamber of Commerce in other cities, is actively engaged preparing for the proper entertainment of the delegates, who will be taken to the National Cash Register plant for a reception and entertainment by the officials of that corporation, the National Soldiers' Home, and the plant of the Mercantile Corporation Company, where all the stamped envelopes and newspaper wrappers for the United States Government are made. An automobile ride down the valley and an inspection of the paper manufacturing plans in this section of the country are also embraced in the proposed programme.

Former Mayor Powers is Dead

[SPECIAL TO PAPER]

HOLYOKE, Mass., Sept. 28—Former Mayor Lewis J. Powers, of Springfield, president and treasurer of the Powers Paper Company, died at his home in that city one day recently. For many years he conducted paper mills in Holyoke, but a number of years ago he erected a plant in Brightwood and moved his Holyoke plant to that place.

For a good part of his life Mr. Powers was connected with the paper business. He commenced as a newsboy, and succeeded so well that he bought out a newsroom business and later took up the manufacture of paper. In 1861 he became selling agent for the Glasgow Paper Company of South Hadley Falls and built up a large paper jobbing business.

In 1866 with Charles O. Brown Mr. Powers organized the Powers & Brown Paper Company and bought the old Berkshire mill at Dalton of Thomas G. Carson. The following year he sold out his share in the business and then bought with J. H. Appleton the Riverside Paper mill in Holyoke and four years later sold out his share to his partner. In 1888 Mr. Powers assisted in forming the Connecticut River Paper Company which bought the Riverside plant, the Powers Paper Company being also given quarters in this plant. At the time of the formation of the American Writing Paper Company the Powers company was manufacturing papetries, envelopes and tablets and did not go into the combine, although the Connecticut River Company was taken over.

NEWS OF HOLYOKE AND VICINITY.

Robert Gillette, bookkeeper at the Hampshire Paper Company, left this week with his wife for Chicago where he will join a party of stationers and manufacturers en route for San Francisco where they will attend the eleventh annual convention of the Stationers and Manufacturers Association.

Charles H. Morgan, for nearly forty years connected with the Whiting Paper Company, has been granted a leave of absence. For the past fifteen years Mr. Morgan has been bookkeeper for the company.

The announcement that England will allow the shipment of drugs and chemicals from Germany to America will afford considerable relief in the city, for the local paper and textile manufacturers have felt the shortage in dyestuffs to a marked degree and many of the brands of paper had to be discontinued because of the inability of the manufacturers to secure the proper dye.

K. Raymond Ely, of the Crocker-McElwain paper mill office, and Miss Dorothy F. Porteous were married the past week.

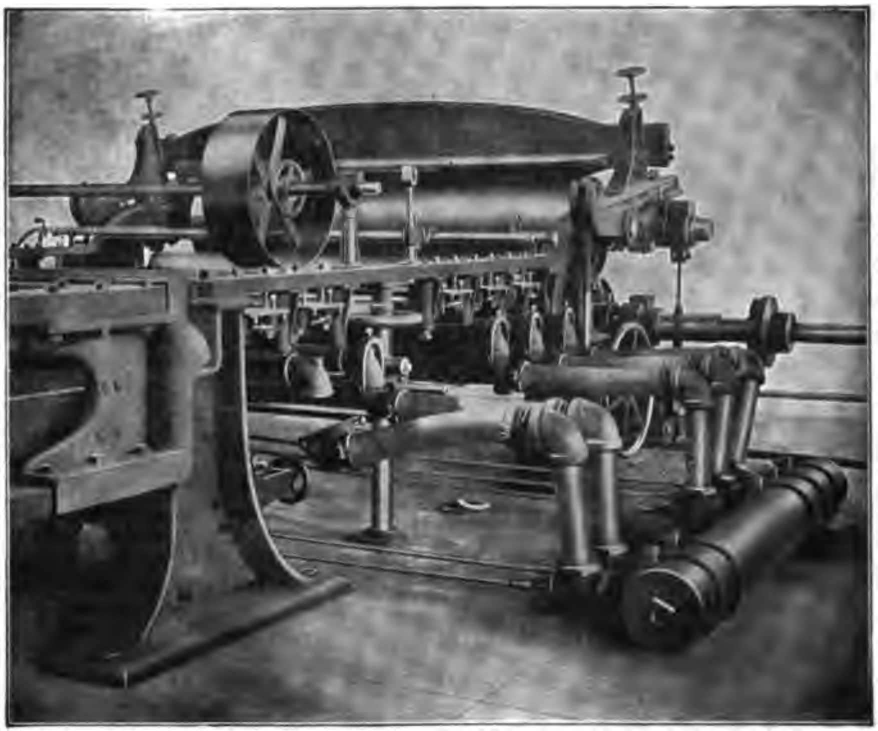
China Has No Attraction for Papermakers

[SPECIAL TO PAPER]

HOLYOKE, Mass., Sept. 28—According to letters received in Holyoke from the papermakers who went to China from the city about a year ago, the men are not having a very enjoyable time. It is stated that there is considerable sickness among them. The rainy period is a long one and there is a lack of fresh air, while the food is not what they are accustomed to. The drinking water is bad and has to be boiled before using. From the tone of the letters it is probable that the stay of the Holyokers in China will not be long.

NEW HOLYOKE CORPORATIONS

Certificates of incorporation were granted Tuesday at Boston by State Commissioner of Corporations William D. Trefry to two new corporations which will do business in Holyoke, namely, the Whiting & Company, Inc., and the Whiting Stationery Company. The amount of authorized capital specified in the certificate for each is $100,000, and both have the same incorporators, officers and purpose. William F. Whiting is president of both, William Whiting is treasured, and Sidney E. Whiting is clerk. The stock is divided into 1,000 shares of common, each share having a par value of Whiting is president of both, William Whiting is treasurer, $100. The purpose of each corporation, as outlined in the certificate of incorporation, is "manufacture and sale of all kinds of stationery, envelopes, tablets, papeteries, paper boxes, paper mill supplies," and all kinds of pulp products.



THE number of parts connected with the suction boxes to be removed when changing the wires has been greatly reduced in the Ideal Fourdrinier Part. The boxes may be removed either from the front or the back. The manner of connecting the syphon hose to the suction boxes instantaneously and without the use of screw connection should be noted as an important improvement. The arrangement of the suction boxes and hose apparatus is such as to afford easy access to the stretch screw from the back.

In the design of the couch roll stand there is a large amount of room for guide roll, and also for putting on the wire. The upper roll is lifted by a very simple mechanism that does not get out of order. The doctor on the upper coucher is securely fastened in place, is of correct design, and has a large amount of adjustment to meet the idea of the machine tender.

The pressure on the upper roll is applied directly to the journal instead of to the bearing arm. This arrangement forces the two rolls together, and serves to maintain them in proper alignment to each other. The new plan has been found to be a great improvement. It entirely obviates the trouble, which in the ordinary machine has been the cause of so many patent doctor blades, for this particular place.

Send for bulletin describing the Ideal Fourdrinier

The Sandy Hill Iron & Brass Works
Hudson Falls, N. Y.

Appleton (Wis.), Mill Notes

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 21—During the past six weeks the Gilbert Paper Company, of Menasha, has added a new Ball drive to one of its paper machines, has put in a new pulper, new suction rolls and various other auxiliary equipment, principally intended to facilitate the making of its regular grades and also some special grades which it has lately undertaken to produce.

In following out its "Safety First" principles, the Central Committee of the Kimberly-Clark mill at Kimberly has made it a rule that children that have been accustomed to bring dinner pails to workmen in the mill, must not enter the mill hereafter. Provision has been made for receiving and taking care of the pails in an anteroom. Danger of accident to children will thus be avoided.

Since the new steam boilers were added to the paper mill of the Thilmany Pulp & Paper Company, at Kaukauna, a new smoke stack has been put up to take care of them.

Repairs are going on to the sluice gates in the Menasha dam.

A Milwaukee newspaper mentions the name of Walter Alexander, of Wausau, in connection with the nomination for United States Senator next year on the Republican ticket.

Thomas Hanson, employed in the mill of the Lakeside Paper Company, had three fingers smashed last week.

George Gillen, employed in the mill of the Thilmany Pulp & Paper Company, had his knee wrenched last week by being caught in a belt.

T. M. Gilbert, of Neenah, made a trip to New York and Boston last week.

George W. Mead and family, of Grand Rapids, have left for a motor car tour of the East. They will go through to the Coast and will take three weeks to make the trip.

General News of Western Mills

[SPECIAL TO PAPER]

APPLETON, Wis., Sept. 28—The Consolidated Water Power & Paper Company is installing at its Grand Rapids mill a machine for making a coarse grade of wrapping paper from materials that heretofore principally have gone to waste. The machine is about eighty inches wide and will turn out a considerable quantity of this new product.

The new Neenah Hotel has had a temporary setback due to the proposals for building the structure coming to considerably more than the amount of money publicly subscribed for the enterprise. Either more money will have to be raised, or else the plans will have to be scaled down to a more modest basis.

An Oshkosh jury returned a verdict of $5,000 damages against A. W. Priest, the Appleton paper manufacturer, last week, for injuries to a boy who was struck by the Priest automobile a year or more ago. Subsequently it was found that the verdict, which was a sealed one, has certain contradictory features about it, which will probably require legal interpretation before it can be asserted, if it is so asserted, that the verdict is really against the defendant.

Russell H. Alexander, foreman of the bleaching plant of the Nekoosa-Edwards Company's mill at Port Edwards, was working at a shredding machine last week when his arm was caught in it, and fearfully lacerated. It was found necessary to amputate the arm.

W. M. Gilbert and a number of Chicago business men returned last week from a hunting trip up the Wolf river on the Gilbert steam yacht *Tia Juana*. This hunting trip has come to be something like an annual affair.

George A. Whiting, of Neenah went to New York on business last week.

George Thom left last week for Boston to continue his studies at the Massachusetts Institute of Technology.

A report from an American consul in Switzerland states that a firm in his district desires to correspond with American manufacturers or exporters of printing paper and cardboard. The firm is willing to accept customary American export terms and conditions. prices, c. i. f. European port and f. o. b. American port. Samples are requested with quotations. References obtainable. Correspondence may be in English. Refer to File No. 18,399.

Robbery At Richardson Paper Plant

[SPECIAL TO PAPER]

DAYTON, O., Sept. 28—A sensation of goodly proportions was created among the employees of the Richardson Paper Company, at Lockland, Thursday of this week, when robbers lifted the sum of $4,269.96, part of the weekly payroll, out of the company's safe. The robbery was perpetrated in broad daylight and had apparently been cleverly planned. Up to this time the authorities have been unable to establish even one substantial clue as to the identity of the thief. The office force of the company, it is believed, had been under observation for some time before the robbery was planned.

Careful scrutiny must have been kept on the movements of the employees during the noon hour. As a rule, the office in which the safe is kept and where the robbery occurred is deserted between the hours of 12:30 and 1 o'clock. Shortly after 12 o'clock the office force begins leaving for the noon meal, or repairing to the dining room of the plant where meals are served. Instructions had been left that the last person leaving the office should close the door but not lock it.

Thursday was payday and one of the days on which the office was deserted, closed, but not locked. Shortly before one o'clock the members of the force, who had gone to the third floor to dine, were attracted to the winodw by great clouds of smoke arising from the street below. Hastening to the window they noticed an automobile passing down the street at a rapid speed. This did not excite their suspicion, however, and the theft was not noticed until one of the clerks went to the safe to get one of the ledgers. To his surprise the combination on the outer door was not on and inner door was unlocked. The discovery of the theft followed a moment later.

President Richardson said, in response to an inquiry whether in his opinion the automobile carried the thief, that he would be sorry to think that it did, because, had he suspected it, there were other machines standing about the plant that could have been used as a means of pursuit. "It is possible that the thief was in the automobile, but I dislike to think that we left such a splendid opportunify escape," he declared.

Aesthetics Observed by Paper Mills

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 28—The Bryant Paper Company has just completed grading all of the vacant land about its plant. The bare spots have been covered with a beautiful lawn and flower gardens which add much to the attractiveness of the big mills. President Frank H. Milham is displaying a civic spirit that might well be followed by other concerns outside of the paper industry. All of the papermills in Kalamazoo give much attention to the beautifying of their surroundings.

DISMISS INDICTMENT AGAINST S. B. MONROE

Upon motion of Special Prosecutor Charles Nichols, of Lansing, the indictment against S. B. Monroe, stockholder and official of several Kalamazoo paper companies, has been dropped in circuit court by Judge George V. Weimer. This action was taken when the prosecutor pointed out to the judge that there was no evidence presented to show that Mr. Monroe was guilty of any wrong. He even went so far as to say that there was nothing to show intent to do wrong. The action taken against Mr. Monroe resulted from spite of a former high official, who for a short time was in a position to wield considerable authority.

DRIVE WELLS TO PRESERVE WATER SUPPLY

To guard against possible contamination of its water supply, the Kalamazoo Paper Company this week announced that contracts would be let at once for the driving of several big wells which will supply the company as soon as they are completed. The erection of a new papermill up the river above the plant of the Kalamazoo Company may possibly hurt the water supply that latter company is now receiving, and to ward against anything like this the wells will be driven.

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Why Try to Outbid the War God?

The tremendous and unprecedented foreign demand for leather for military purposes is naturally forcing prices higher and higher.

Why should you, the user of belting, pay this "war tax" on leather when you can buy rubber belting from us at "peace prices"?

Thirty years' investigation of belting requirements in every power line qualifies us to recommend the right belt for every purpose.

RUBBER BELTING

Quaker City—Crown—Hercules

These three brands solve the belting problems for practically all classes of power transmission duty, conveyor purposes, elevator work, etc.

In quality, workmanship and performance, these belts are the ultimate values in their grades.

You owe it to yourself to investigate.

Many belt users do not realize to what extent rubber belting would increase efficiency and effect economy in their plants.

Acquaint us with your requirements and conditions—we will lay before you convincing facts, figures and PRICES.

This service of our Belting Experts is without charge or obligation.

QUAKER CITY RUBBER COMPANY

Manufacturers of Mechanical Rubber Goods

PHILADELPHIA
629 Market Street

CHICAGO
182 West Lake Street

PITTSBURGH
211 Wood Street

NEW YORK
207 Fulton Street

Kalamazoo Prepares for Prosperity Week

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 28—Many of the paper companies are at present arranging for exhibits to be made during the prosperity week celebration this city expects to hold from October 4 to 9. Nearly all of the companies have signed up for an exhibit space and doubtless what they will have to show the public will be of considerable interest. President Frank H. Milham, of the Bryant Paper Company, who is also president of the Chamber of Commerce, and C. A. Fox, secretary of the Bryant Paper Company, have much to do with making plans for the celebration. Mr. Fox was appointed one of the commissioners, while Mr. Milham was made general director.

BUSINESS IS IMPROVING

Business is fast picking up about here. This is indicated by the fact that all of the machines in all of the mills are running to capacity. This week three machines in the mill of the Otsego Coated Paper Company began working twenty-four hours a day in order to take care of all the business that is coming. Other mills also report similar activity.

Progress On the New Rex Mill

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Sept. 28—Through rain and shine the laborers employed on the new mill of the Rex Paper Company are working. The contractors are letting nothing delay the work. During the past week a good share of the outer brick walls have been erected and big shipments of building material are being made to the site each day. There is almost as much activity about the place on Sunday as any other day of the week. The railroads keep gangs busy on the tracks and there are others who work about the place every hour that there is daylight. John King, the organizer and president of the company, is on the job every minute directing the work.

Maine Board of Trade Visits Paper School

[SPECIAL TO PAPER]

ORONO, Me., Sept. 28—Members of the Maine Board of Trade, in session at Bangor, visited the University of Maine last Thursday. They were conducted by President Aley, Dean Stevens, Dean Boardman, and Professor McKee. Considerable time was spent in the Pulp and Paper department, where Professor Durgin demonstrated the bleaching and coloring of pulp, and Professor Stephenson exhibited the use of the various paper testing instruments and the staining and microscopic examination of fibers. The experimental paper mill was seen in operation.

Visitors are always welcome at the University and invariably find something of considerable interest to entertain and instruct them.

News of Fitchburg, Mass., Mills

[SPECIAL TO PAPER]

FITCHBURG, Mass., Sept. 28—Beginning October 1 a new wage scale for all the employees of the Fitchburg Paper Company will go into effect, according to the notice given the employees last week and the change will affect the employees in the four mills of the company.

Patrick Maloney, who has been in the employ of the Fitchburg Paper Company for the past twenty-seven years and until recently general foreman of the mills, will take charge of a mill in another city. William Weaver will be foreman of the No. 1 and 2 mills and Thomas Rogan of the No. 3 mill. W. J. Stephenson will remain as foreman of the No. 4 mill. George R. Wallace, jr., is the general mill manager.

A. J. Crone has bought the *Enterprise*, of Deerwood, Minn.

John Van Arnam is the new owner of the *Journal*, of Leonard, N. D.

Rome Walker has leased the *News*, of Ruskin, Neb., to B. O. Benson.

The *Advocate*, of Waubay, S. D., has been purchased by Rome Walker.

For "Rag" Papers Only?

If publishers should insist that paper be made from materials having the "atmosphere" of the stories to be printed, the mills making paper from rags would have to select their rag stock following a schedule something like this, according to the Alling & Cory Company, who are large manufacturers of special papers:

Class of Story	*Rags*
Police Stories	Collars
Prize Fight Stories	Cuffs
Tales of the Underworld	Shirts
Pathetic Stories	Handkerchiefs
Love Stories	Ties
Dog Stories	Pants
Polar Stories	Overcoats
Stories of the Sea	Bathing Suits
Dream Yarns	Pajamas
Artists Stories	Drawers
Feature Stories	Socks
Footlight Fancies	Stockings
Human Interest	Petticoats
Stories from the Front	Aprons
Vanity Stories	Gowns
In the Open	Sunbonnets
Ghost Stories	Night Gowns
Heart Throb Stories	Corsets
Arm-y Stories	Waists

Walden's A B C Guide

The 1915-16 edition of Walden's A B C Guide was published September 1. This handy and popular directory is in no way a duplication of the other paper trade directories. It is the only directory which is devoted exclusively to the paper manufacturing and paper jobbing interests. A book of 380 pages, in heavy cloth binding, it contains three distinct sections. These are each printed on different colored papers, with the idea, evidently, of making reference easy and quick.

The first section is a complete list of paper dealers in the United States and Canada. It is a most intelligently compiled list of paper jobbers, as it gives important and most necessary data as regards each concern—the kinds of paper handled, and the names of principals and department heads. There is also included the addresses of mill branch offices, and also the listings of mill agents and brokers.

Section two is a State list of paper mills in the United States, and, besides the name and location of each mill, this gives the names of the officers or principals of each concern, the kinds of paper produced at each mill, and the trim or width of each paper machine operated. There is also a list of makers of coated and glazed papers, the grades made by each concern being stated.

Section three is a list of all manufacturers and converters of paper, classified under headings of grades made.

Walden's A B C Guide for 1915-16 contains all necessary data in regard to the manufacturers and the jobbers of paper. The price of the book is $1 a copy and orders should be sent to the Walden Publishing Company, 132 Nassau street, New York.

Plans of the League of Advertising Women

The League of Advertising Women held their first meeting of the season last Tuesday evening at the Prince George hotel, New York, and arranged a programme for the coming year. The plans of the League include an interesting and comprehensive list of subjects. The programme will be printed and can be had on application at the office of the secretary, Miss Mabel Grasswinckel, 381 Fourth Avenue, New York City.

The president of the League of Advertising Women is Miss J. J. Martin, advertising manager of the Sperry-Hutchinson Company, and the vice president is Mrs. Caroline L. Overman, of Churchill-Hall, New York.

Machine tenders and beatermen out of a position can get in touch with employers by using the Classified Ad page of PAPER.

Learn what NORWOOD FILTERS will do for you

PRESSURE TYPE

There's no Filter built which operates more economically or more satisfactorily.

INSURES
BETTER QUALITY
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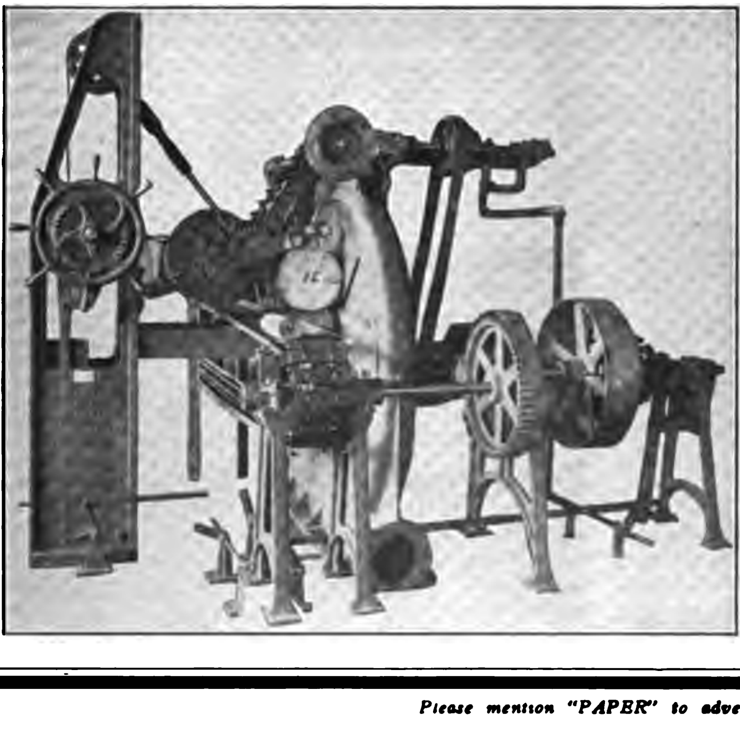
Convince Yourself
Write us today

Norwood Engineering Company

Florence, Mass.

The LeMoine & Schafer Barker Attachment Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today

The Appleton Machine Co.
APPLETON, WIS., U. S. A.

THE MARKETS

NEW YORK, September 28, 1915

MECHANICAL PULP

Favorable water conditions, enabling newsprint mills to grind ample supplies of pulp, have restricted the market for grinders and no early improvement is considered likely, especially as the news mills have been able to accumulate supplies for future needs. There has, however, been no special selling pressure, which in part accounts for steady quotations at $15.75 to $16.50 f. o. b. mills.

DOMESTIC AND FOREIGN CHEMICAL PULP

There has been no halt in the upward movement of prices, and some increase in inquiry is perceptible, though buyers are still apart in their views as regards values. Aside from arrivals from Sweden and Norway representing withdrawals on outstanding contracts business has been dull and featureless. Spot stocks at the principal ports of entry in this country have been nearly cleaned up. Advices from Norway and Sweden note that mills are busily engaged in supplying European markets at full asking prices, which accounts for the limited volume of new business closed for shipment to this country. Owing to the removal of the duty on pulp by Germany, and the urgent demand for supplies from France and England, shipments are being made by domestic manufacturers to those countries, with the result that the upward tendency of values has become more pronounced. Some paper mills are showing more eagerness to place orders fearing a further advance in prices, while others are holding aloof, pending developments.

Sulphite, foreign—	
Bleached, ex-dock	**3.00 @ 3.10**
Unbleached, ex-dock	**1.05 @ 2.15**
Sulphite, domestic—	
Bleached, ex-dock	**2.70 @ 2.80**
Unbleached, ex-dock	**2.00 @ 2.15**
Soda, domestic—	
bleached delivered	**2.20@ 2.30**
Scandinavian Kraft	**1.90 @ 1.95**

BAGGING, ROPE, ETC.

The firm, upward tendency of values has been well maintained in the face of a good demand, particularly for bagging and rope of various descriptions. Owing to large withdrawals of supplies, spot stocks show a further shrinkage. The better qualities of gunny and mixed bagging, as well as manila rope, have been mostly dealt in. Arrivals for the week have been comparatively light, and under limited offerings, the tone of the market is firmer.

Gunny, No. 1	**1.85 @ 1.90**
No. 1 Mill run	**1.45 @ 1.70**
Domestic	**1.60 @ 1.70**
Light Burlap	**1.60 @ 1.75**
Mixed Bagging	**1.00 @ 1.05**
Sound Bagging	**1.20 @ 1.30**
Wool Tares, light	**1.65 @ 1.75**
Wool Tares, heavy	**1.60 @ 1.70**
Foreign Manila rope	**2.60 @ 2.65**
Domestic Rope	**2.75 @ 2.85**
Mixed Rope	**1.05 @ 1.10**
Flax Waste	**3.45 @ 4.00**

IMPORTED RAGS

Inquiries have been more numerous and a larger volume of sales is reported for the week just ended. Arrivals of supplies have been small and this coupled with normal spot stocks has led to a decidedly stronger feeling among holders. Prices closed firmer and in some instances holders named slight advances on the better qualities of good graded rags.

German Blue Cottons	**2.20 @ 2.25**
Dutch Blues	**2.20 @ 2.30**
French Light Blues	**2.20 @ 2.45**
New Light Prints	**3.70 @ 4.45**
New Mixed Prints	**2.95 @ 3.40**
German Linen Blues	**3.45 @ 4.15**
German Linen, Grav	**4.45 @ 5.28**
German S. P. F.'s	**3.45 @ 3.65**
German Light Prints	**1.95 @ 2.45**
Dark Colored Cottons	**1.10 @ 1.20**

DOMESTIC RAGS

Owing to slow collections and small stocks, a steadier tone has characterized the market throughout the week. Aside from a slight improvement in the demand for the better and lower qualities of rags trading on the whole has been somewhat restricted. Dealers appear less inclined, however, to urge sales at important price concessions and are looking forward to a gradual improvement in the demand.

New Shirt Cuttings, No. 1	**5.20 @ 5.40**
New Shirt Cuttings, No. 2	**3.45 @ 3.65**
Fancy Shirt Cuttings	**3.30 @ 3.60**
New Blue Cottons	**2.70 @ 3.15**
New Dark Cotton	**1.45 @ 1.70**
New Unbld ctgs	**5.45 @ 6.00**
New Black Cottons	**1.70 @ 1.95**
No. 1 Whites	**2.70 @ 3.20**
Soiled Whites, street	**1.15 @ 1.25**
Soiled Whites, house	**1.75 @ 1.90**
Thirds and Blues	**1.30 @ 1.40**
Satinette Garments	**1.10 @ 1.20**
No. 3 Satinettes	**1.00 @ 1.05**
No. 4 Satinettes	**.85 @ .90**
No. 1 Tailor's Rags	**.70 @ .75**

TWINES

No further price changes have been announced by makers of twines and rope. Unsettled primary markets for the raw material have influenced dealers to a more conservative policy, operations during the week having been mostly of a hand-to-mouth character. For export little has been done. The close was quiet and quotations more or less nominal.

Sisal Hay	**8½@ 9**
Sisal Lath Yarn	**8 @ 8½**
Manila Rope	**12½@13**
Manila Rope, No. 2	**11½@12**
Jute Rope	**6¾@7¼**
Jute Wrapping Twines—	
2 to 6 ply—	
No. 1	**10½ @ 11**
No. 2	**8½@8¾**
Jute Twines, 18	**12¼@12¾**
Jute Twines, 24	**11¾@12¼**
Jute Twines, 36	**11¼@11¾**
Jute Twines, 46&60	**11¾@11¾**
Jute Twines, 4½&6	**6¾@ 7¼**
Paper Maker's Twine	**5½@6**
B. C. Hemp, 18	**17 @17¼**
B. C. Hemp, 24	**16½@16¾**
B. C. Hemp, 36	**16 @16½**
Amer. Hemp, 4½&6	**14½@15**

OLD PAPERS

There has been a further slight improvement in trading covering the entire list of old papers. Common and mixed papers have attracted most attention and values are firmer, which is also true of book stock and manila varieties. Prospects for a return of normal market conditions look brighter to most dealers who speak optimistically of the outlook.

No. 1 Hard White Shavings	**2.35 @ 2.40**
No. 2 Hard White Shavings	**1.95 @ 2.00**
No. 1 Soft White Shavings	**1.60 @ 1.70**
No. 1 Colored Shavings	**.75 @ .85**
No. 2 Colored Shavings	**.55 @ .60**
Magazine Flat Stock	**.80 @ .85**
No. 1 Crumpled	**.65 @ .70**
Solid Ledger Stock	**1.70 @ 1.80**
Ledger Stock	**1.30 @ 1.45**
White Blank News	**1.00 @ 1.05**
Extra Manila Cuttings	**.85 @ .95**
New Manila	**1.25 @ 1.35**
No. 1 Manila	**.60 @ .70**
No. 2 Manila	**.30 @ .40**
Box Board Chips	**.25 @ .35**
Bogus and Mill Wrappers	**.40 @ .45**
Strictly Overissue News	**.45@ .50**
No. 1 Mixed	**.27 @ 25**
Folded News	**.30 @ .40**
Common Papers	**.20 @ .25**

CHEMICALS

Decided firmness has characterized the market for the entire list of papermaking chemicals during the past week, and quotations on the leading varieties are maintained steadily at the prices named. Bleaching powder has continued in active request and prices closing at 2 to 2½c for spot lots as to terms of sale, with light offerings, owing to limited stocks; for 1916 contract deliveries holders name 1½c and upwards, as to quantity; a fair volume of sales for export is reported.

Continued on page 36

Telephone {1700 1701} Broad Cable Address, "Lagerlot Newyork"
Scandinavian-American
Trading Company
PRODUCE EXCHANGE BUILDING, NEW YORK
IMPORTERS AND EXPORTERS OF
FOREIGN AND DOMESTIC
WOOD PULP
OF ALL KINDS
AND
PAPER MILL SUPPLIES
HANS LAGERLÖF, Pres.

Use Positive Filling

Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

HOW can you get the crushing brushing effect on your fibers when the steel bars in your Wood and Steel filled Jordan Engine deteriorate to a knife edge, caused by chemicals in your stock? Use our Positive Fillings; they stay up square, and are not affected by the chemicals in your stock.

Correspondence from any mill invited

BAHR BROTHERS MANUFACTURING CO.
211 I. O. O. F. BUILDING MARION, IND.

SINCE 1878
BUCHANAN & BOLT WIRE CO.
HOLYOKE, MASS.
OUR SPECIALTY
FINE WIRES FOR MAGAZINE AND BOOK PAPERS
Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires
Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.
QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON
Foreign & Domestic
RAGS & PAPER
STOCK
New Cuttings, Jute Stock
Sizing
SULPHITE &
SODA PULPS
200 FIFTH AVE., NEW YORK

L. L. BROWN PAPER CO.
Adams, Mass.
Makers of First Class
LINEN LEDGER and RECORD PAPER
for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records
Ledgers
Linens
Bonds
TRADE MARK
Brown's Papers have always received the highest awards whenever exhibited in competition with other makes
Mills established 1850
The Watermark of Quality

LONDON: TEMPLE BAR HOUSE, 28 FLEET ST.
SYDNEY MELBOURNE WELLINGTON BOMBAY
Parsons Trading Company
Paper Export
Pulp Import
Paper Stock
STOCKHOLM BUENOS AIRES HAVANA MEXICO
NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

Caustic soda ruled firmer with values tending upward though buyers are finding it difficult to make purchases for prompt shipment, owing to manufacturers having practically sold out their production; sellers named 5 to 5¼c as to terms of sale; for 1916 contract deliveries holders named 2c basis 60 percent. Sal soda is meeting with a seasonable demand at .60c and upwards, for barrelled supplies, f.o.b. works; spot lots of concentrated sold at 1½c and upwards, as to quantity. There has been a repetition of activity in spot lots of alum for direct consumption at firm values, ranging from 5.10c and over and 6c and upwards, for ground and powdered potash, respectively, while ammonia sorts brought 3¾c to 4⅛c and 5c to 5⅝c for ground and powdered, respectively. Sulphate alumina sold at 1¾c and upwards, and 1.40c and above for high and low sorts, respectively. Brimstone is finding a steady outlet at $22 to $22.50 a long ton, as to shipping point. New orders booked were small, deliveries on outstanding orders being fairly large. China clay closed steady but quiet at $7.50 to $9 for domestic and at $12 to $14 for imported, according to quantity and quality ordered f.o.b. New York.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended September 25, 1915

WOODPULP

Scandinavian American Trading Co., str. Ryndam, Rotterdam, 52 bs. (10 tons) dry sulphite.
Scandinavian American Trading Co., str. Kristianiafjord, Kristiania, 1 pge.
Parsons Trading Co., by same, 160 bs. (80 tons) dry sulphite.
Brown Bros. & Co., by same, 840 bs. (105 tons) dry sulphite.
International Pulp and Paper Co., schr. R. Belleveau, Bridgewater, 403 tons, 1,714 tons.
International Pulp and Paper Co., schr. C. Strong, Wentworth, N. S., 698 tons.

MISCELLANEOUS PAPER STOCK

T. Boyd & Co., str. Baltic, Liverpool, 149 bs. bagging.
Brown Bros. & Co., by same, 160 bs. paper stock.
Salomon Bros. & Co., str. Esperanza, Vera Cruz, 95 bs. cotton waste.
L. H. Abendheim, str. Orduna, Liverpool, 1 ble. bagging.
Castle, Gottheil & Overton, str. Gov. de Lantshiere, St. Nazaire, 517 bs. rags.
E. Butterworth & Co., str. Bovic, Manchester, 155 bs. old bagging.
Mente & Co., by same, 192 bs. old bagging.
W. Hughes & Co., by same, 43 bs. linen cuttings.
Wilkinson Bros. & Co., by same, 65 bs. yarn waste.
A. Katzenstein, by same, 126 bs. paper stock.
Schulz & Ruckgaber, by same, 56 bs. paper stock.
Castle, Gottheil & Overton, by same, 14 bs. new cuttings.
W. O. Davey & Co., str. Rotterdam, Rotterdam, 93 coils old rope.
Brown Bros. & Co., by same, 209 bs. bagging.
Baring Bros. & Co., by same, 128 bs. old bagging.
Marx Maier, str. Waaldyk, Amsterdam, 80 bs. bagging.
G. Amsinck & Co., by same, 34 bs. bagging.

CHEMICALS

J. L. & D. S. Riker, str. Baltic, Liverpool, 50 cs. bleaching powder.
Arnold Hoffman & Co., str. Orduna, Liverpool, 86 csks. bleaching powder.

OTHER PORT MANIFESTS

AT PHILADELPHIA

Price & Pierce, str. Kentucky, Copenhagen, 2,950 bs. (295 tons) dry sulphite woodpulp.
Brown Bros. & Co., by same, 740 bs. (74 tons) dry sulphite woodpulp.
M. Gottesman & Son, by same, Stockholm, 2,000 bs. (250 tons) woodpulp.
Castle, Gottheil & Overton, str. Zaandyk, Rotterdam, 112 bs. rags.
M. Gottesman & Son, str. Virginia, Stockholm, 300 bs. (60 tons) woodpulp.
Adams Exp. Co., str. Manchester Spinner, Manchester, 131 bs. old rope.
Louis Strauss, by same, 63 bs. new cotton cuttings.
American Exp. Co., by same, 152 bs. paper stock.
Baring Bros. & Co., by same, 25 bs. new cuttings.
Brown Bros. & Co., by same, 38 bs. wool waste.
Merchant's Nat'l Bank, by same, 341 bs. old bagging.
John Watts, by same, 120 bs. waste cotton.
Castle, Gottheil & Overton, by same, 81 bs. new cuttings, 103 bs. rags.
Castle, Gottheil & Overton, str. Florida, Copenhagen, 180 bs. (36 tons) woodpulp.

AT NEWPORT NEWS

M. Gottesman & Son, str. Virginia, Stockholm, 400 bs. (60 tons) woodpulp.
M. Gottesman & Son, str. Kentucky, Stockholm, 2,400 bs. (480 tons) woodpulp.

AT BALTIMORE

M. Gottesman & Son, str. Virginia, Christiania, 480 bs. (75 tons) woodpulp.

Earnings of United Paperboard Company

The annual report of the United Paperboard Company for the year ended May 29 last shows gross earnings of $381,301, against $508,406, and a surplus, after allowing for depreciation, of $22,457, against $141,589.

The report states that the company's pulp mills operated at a small loss during the year. It was less than would have been sustained by closing them down, however. Expenditures for repairs and replacements were made during the year at a cost of $142,235. Improvements and additions were also completed at a cost of $105,752. The tonnage manufactured during the year was 10 percent less than last year or approximately 65 percent of the capacity of the mills.

Salaries and wages were reduced during the year by approximately $40,000 on account of the depression generally prevailing in the paper industry. The company has 1,202 persons in its employ and its stockholders are 381 in number.

Mendelson Bros. Paper Stock Company
Packers of all grades of
PAPER STOCK
General Offices: Karpen Bldg., 900 Michigan Blvd.
Daily Capacity 200,000 Lbs.
Packing Houses and Warehouses Chicago, - - Ill.
When you want quantity and quality in stock, write us.
Long Distance Phones Harrison 2840-5557

The better twines—those you can depend on—are
COLUMBIAN and EUREKA
COMMERCIAL TWINES
MADE FROM HEMP, JUTE AND FLAX
COLUMBIAN is our first quality—a better grade is not made.
EUREKA—second in quality to COLUMBIAN, but superior to many twines offered as "first quality."
COLUMBIAN ROPE CO.
2150-2175 Genesee St., "The Cordage City" AUBURN, N. Y.
Branches: NEW YORK CHICAGO BOSTON

Waterbury Felts and Jackets

ARE MADE AT

1869 **ORISKANY, N. Y.** 1915

Waterbury Cylinder Top and Bottom Felts.
Smooth Filter Felts of quality for speed and finish.

H. Waterbury & Sons Co., Oriskany, N. Y.

EASTERN MFG. CO.

Manufacturers of

BONDS
LEDGERS
WRITINGS
ENVELOPES

Linen Finished Papers a Specialty

Eastern Office:
200 Fifth Avenue
New York

Western Office:
Forsythe Harding Paper Co.
Chicago

Mills: Bangor, Maine Lincoln, Maine

WE GUARANTEE OUR SIZE TO BE ABSOLUTELY CLEAN
Shipped in barrels and tank cars

Our Vera Paper Size

is the purest, strongest and highest free rosin size made. We can furnish you with an ideal rosin size and patented apparatus to use same.

Our Vera Mill Size

is the best soluble paper makers' rosin size made. Ready to use in cold or warm water in the ordinary way without apparatus. Gives better satisfaction and is more economical than mill made size.

Our sizings are cleaned by our new patented process, and we guarantee this size to be absolutely clean, without the least speck of impurity in the same, preventing thereby black specks in the paper.

VERA CHEMICAL CO.

Main Office and Western Factory
NORTH MILWAUKEE, WIS.

Eastern Factory
STONEHAM, MASS.

Miniature Papermaking Machinery

THIS IS THE BEATIG ENGINE

This cut represents our beating engine, built on equally the same lines as the large engines used in all paper mills. It consists of a cast iron tub mounted on a cast iron base; it is 12½ inches wide by 32 inches long, equipped with bed plates of tempered steel, upon which works a cast iron roll, cast on a steel shaft which runs in brass swivel boxes, and has tempered steel fly bars. This little engine will grind all kinds of paper stock into pulp and put it in as good shape in one half hour as a large beater would do the same work in 12 hours, enabling the papermaker to get his right colors in such a short time, thereby saving tons of paper and expensive time. We manufacture a line of miniature papermaking machinery complete in every detail. For experimental work these machines are very valuable to any mill. You can get the same results that you get with full-sized machinery, but at a trifling cost.

Write for full particulars and prices

McKim Foundry & Machine Company, Lockport, N. Y.

Papermaking in Russia

In an account of the technical progress in Russian industries, contributed by U. S. Consul General John H. Snodgrass, of Moscow, to *Commerce Reports,* for which he acknowledges his indebtedness to the Russian *Journal of Finance, Industry and Trade,* is represented that, with regard to the period covered between 1908 and 1913, there was a satisfactory technical advance in the paper manufacturing industry in Russia, particularly in the equipment with modern machinery. It is reported that woodpulp, formerly imported, is now being manufactured at the paper mills. One of the large concerns in Poland stated that it made no profit on its woodpulp, but secured the advantage of not having to rub down the dry imported woodpulp.

The following detailed data was received from two typical concerns: The first company erected a new gas motor of 200 horsepower and introduced filters for sewage, ventilators, sprinklers, the manufacture of cellulose from straw by a method not previously used in Russia, and some general technical improvements. Payment by piecework was also begun, with the result that the cost price of paper decreased while the quality improved. The following figures were given, comparing the results of 1913 with those of 1908: Average production per workman, 2.7 tons in 1908 and 4.5 tons in 1913; per horsepower, 3 tons in 1908 and 4.5 tons in 1913; value of total annual production, $467,710 in 1908 and $626,109 in 1913; number of ships per day, 3 in 1908 and 2 in 1913. The economy attained in the consumption of fuel reached $6,400. The price of the manufactured paper decreased on an average by 10 percent, though the raw material increased in price by 50 percent.

The second concern erected a more powerful steam engine and improved the gear of the paper machinery, increasing the output by 1,100 to 1,800 pounds per day. The following are the comparative data for 1908 and 1913: Speed of the paper machinery in meters (1 meter=3.28 feet) per second, 50 meters in 1908 and 70 meters in 1913; average production per day per workman, 9.18 tons in 1908 and 10.9 tons in 1913; per horsepower, 9.9 tons in 1908 and 12 tons in 1913; total annual production, 1,698.3 tons in 1908 and 2,018 tons in 1913; value of total annual production, $157,585 in 1908 and $142,007 in 1913; consumption of fuel (firewood), valued at $18.22 per cord in 1908 and $26.78 in 1913, 6,780 cords in 1908 and 7,265 cords in 1913.

Other concerns showed a tendency toward reorganization and improvement necessitated by the enormous increase in the cast of raw material. Firewood increased in price by 40 to 50 percent during the five years. Most of the concerns that sent replies pointed out the scarcity of wood (aspen and fir), stating that the supplies are rapidly decreasing and that it is necessary to cultivate timber. The first thing to be done, according to their opinion, is to establish an export duty on the raw material used for manufacturing paper—fir, aspen, and rags. The manufacturers are struggling against the high cost of raw material by spending considerable sums on equipment, but such a proceeding has its limit. It has been found impossible to use paper machinery of large sizes and quick speed because there is a limited demand for paper of one kind, a great variety being required. Besides, such machinery required the vicinity of large areas of timber and skilled laborers. The manufacturers believe that in view of such unfavorable conditions, it will be hardly possible to expect a considerable development of the paper industry in the near future.

Report of the Technical Section Meeting

Continued from page 18

very great benefit to the trade in general, and I understand it is being done now by the Society of Mechanical Engineers.

CHAIRMAN FLETCHER—As I understand it, Mr. Obermanns, that work belongs within the province of the Publication Committee. I should think it would be up to them to develop it. If the Chair gets to appointing a lot of committees, all criss-cross, we are apt to get into trouble. I think we had better leave that to the Publication Committee as one of their subjects to develop.

MR. OBERMANNS—All right, Mr. Chairman.

CHAIRMAN FLETCHER—We have now got down to the reading of papers, and I will just run over what papers are to be presented because after reading one or two of these papers we will probably have to adjourn for luncheon and dispose of the rest of them this afternoon.

Chairman Fletcher accordingly read a list of the papers that were scheduled for presentation at the afternoon session and afterwards called upon D. L. Bellinger to read his paper on "Some Experiences in Refining Groundwood Slivers."

After cinematograph views of the plant of the District of Columbia Paper Company had been thrown on the screen, a recess was taken for luncheon until 2.30 o'clock.

(*To be continued next week.*)

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Voith, J. M., New York.

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No. 4

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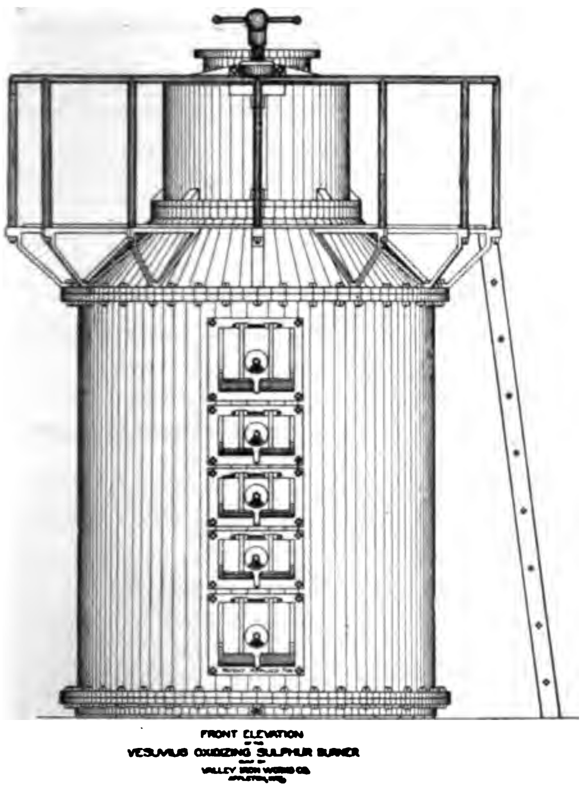

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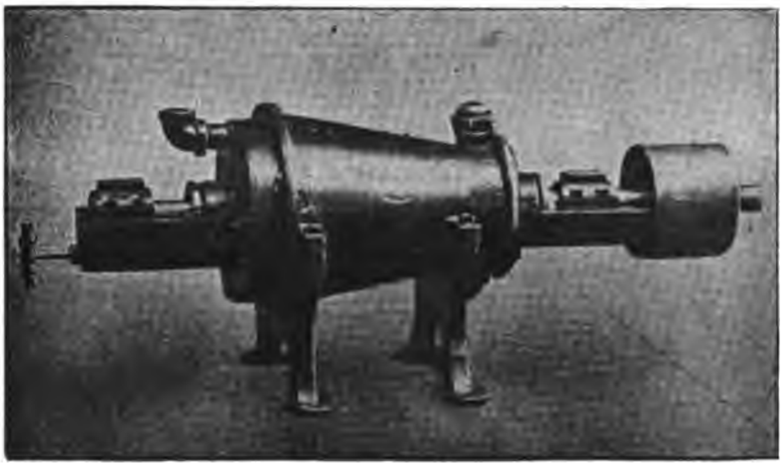

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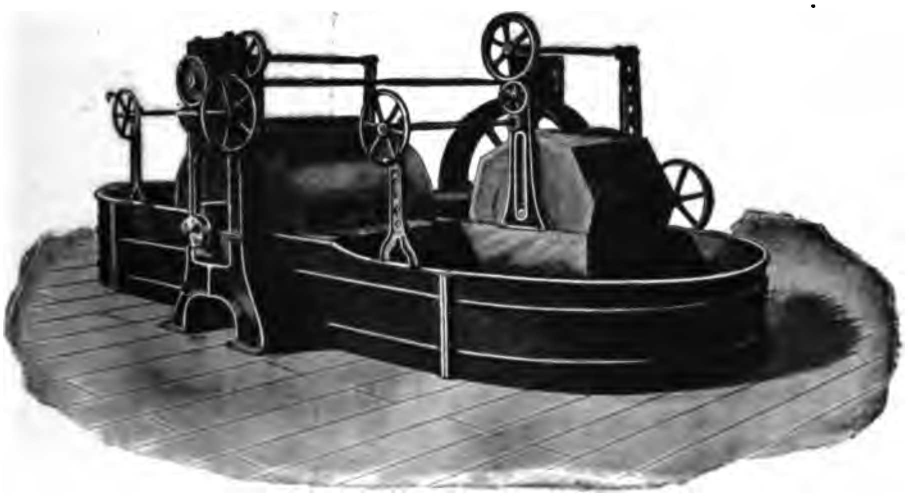

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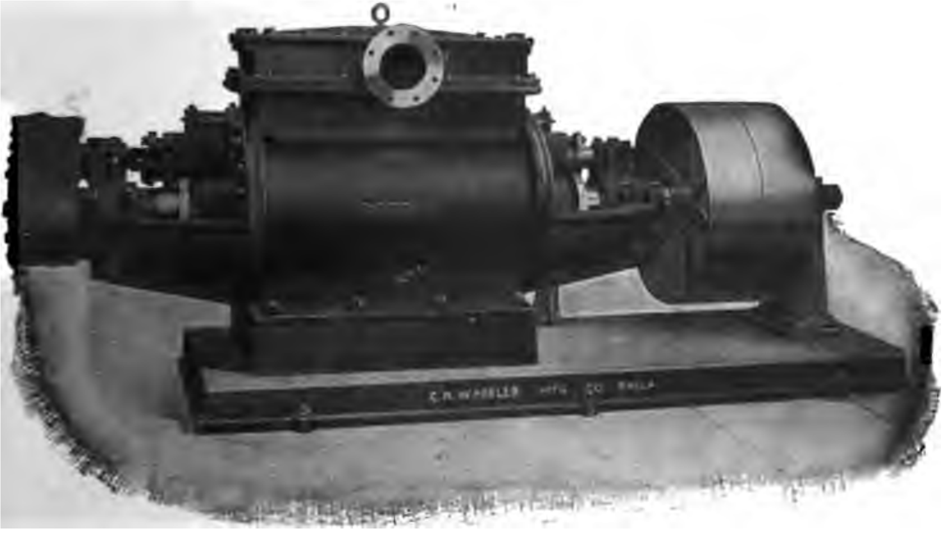

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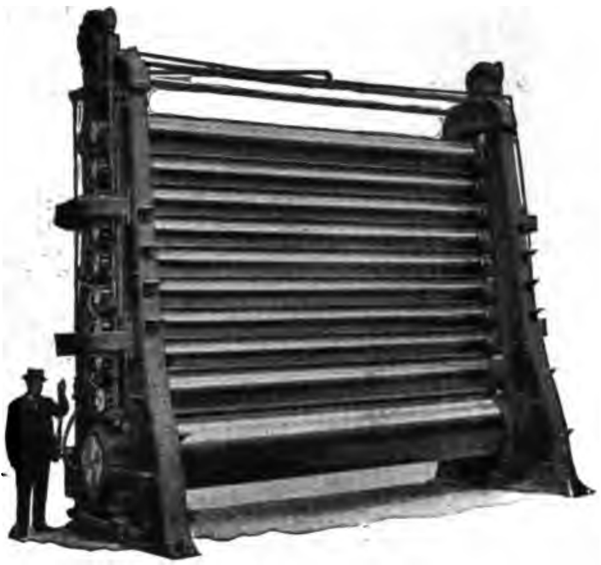

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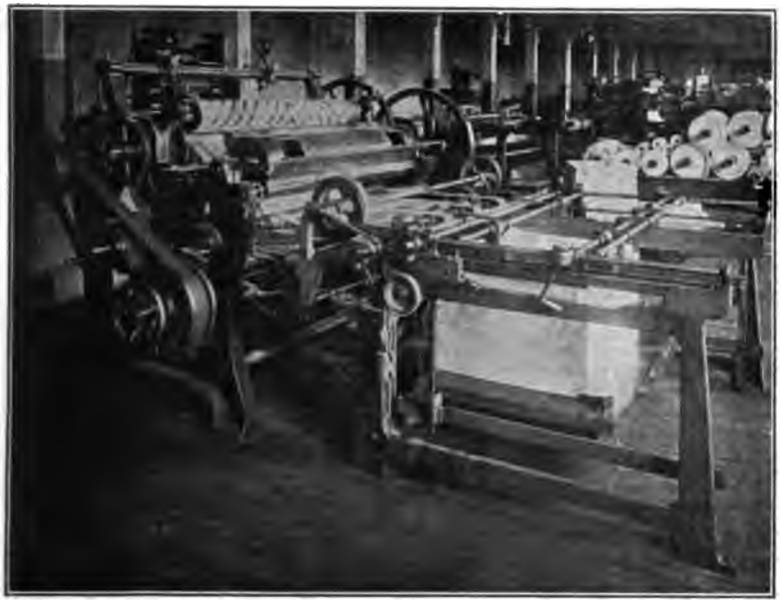

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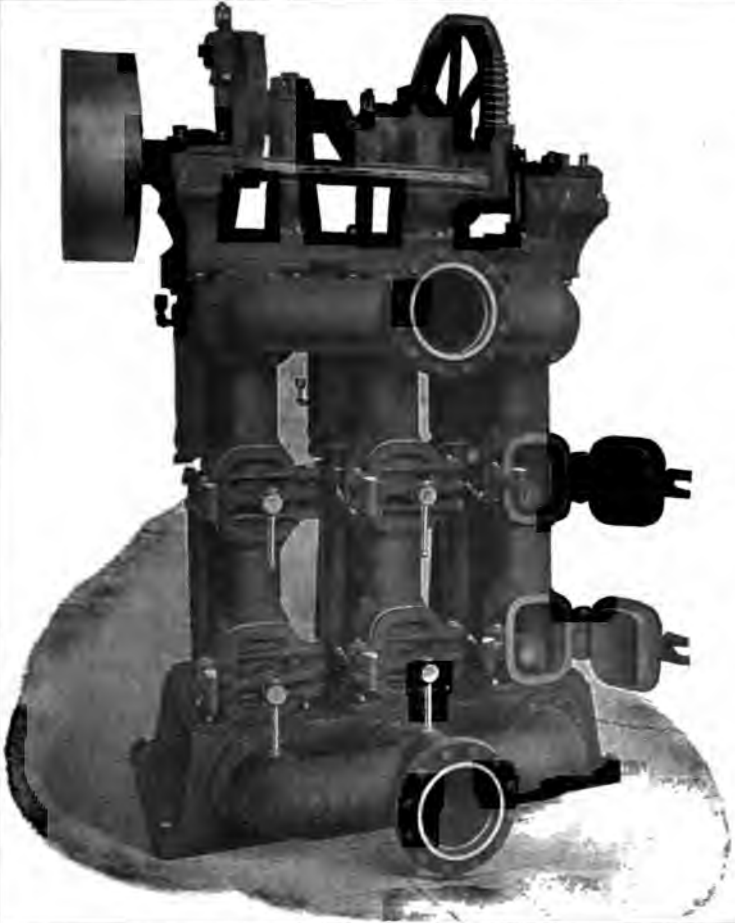

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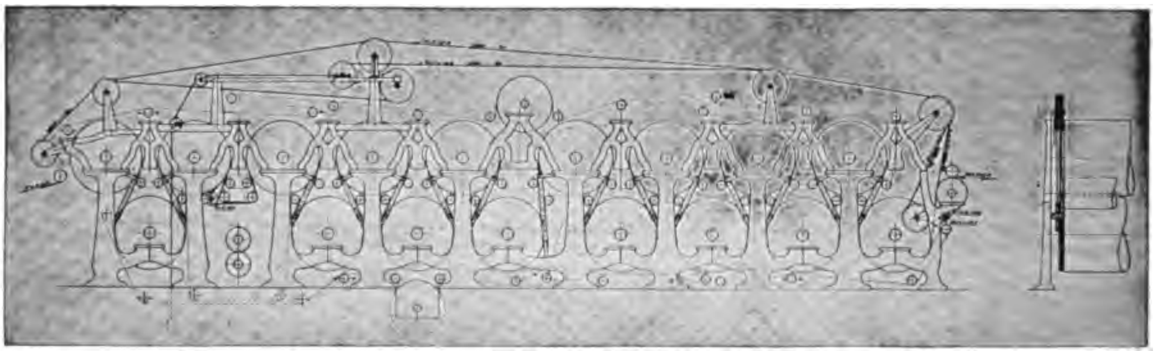

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Vol. XVII OCTOBER 6, 1915 No. 4

Reducing Losses in the Groundwood Mill[1]

Some Experiences in Refining Groundwood Slivers

By D. L. BELLINGER

Engineer, Finch, Pruyn & Co., Glens Falls, N. Y.

THE groundwood mill of Finch, Pruyn and Company, at Glens Falls, N. Y., contains twenty-two grinders, stones 54 in. x 27 in., with three pockets and 14-inch cylinders. There are five wheels, which tested in place as follows: No. 1— 1,800 hp., No. 2, No. 3, and No.4, 2,400 hp. each, and No. 5, 2,000 hp. No. 2 and No. 3 have five grinders, and the others four No. 4 drives, in addition to four grinders and a small individual pumping and screening plant, so that in periods of low water it is not necessary to run the main pumping and screening system.

The total power is therefore about 11,000 hp. Speed is controlled by the method of obtaining pressure water for the grinder cylinders. Each line drives an independent centrifugal pump, which supplies pressure water. This system has proved a most marked success from the standpoint of safe operation and the economical use of water. As the purpose of this paper is to discuss the disposition of groundwood slivers it is proper to state here that it is inconceivable that a constant pressure system, allowing the wheel to run at varying speeds, might reduce the proportion of slivers, and make a more uniform product.

When running full, the mill output is 130 to 145 tons of groundwood suitable for news, halftone and hanging. This means when allowance is made for the various time losses, about seven tons a stone, using about 70 hp. per ton.

The screening system is as follows: A flat inclined sliver screen perforated with ¾ in. round holes: the rejections are wasted. Next a rotary screen of steel plate having ⅜ in. round holes. Next the fine screens, 200 flat plates, four horizontal centrifugals, one vertical centrifugal, two vertical rotaries, and a battery of recently developed horizontal rotaries. Tailings from the centrifugals go directly to the refiners. The overflow from the flats and the rotary tailings goes over 124 flat plates, and the overflow from these goes over forty-four flat plates. The rejections from this last line of flats, fitted with very coarse plates, and from the rotary sliver screen having ⅜ in. perforations, are wasted. The few tests made so far indicate that this amounts to six or seven-tenths of 1 percent.

Since 1910 consistent efforts have been made to reduce the losses in the groundwood mill. Obviously, the first point of attack was the woodroom. Economies in preparing wood are still a subject for study. The next effort was to reduce the white water waste. Improvements have been made, and more are planned. The next attempt was to reduce the proportion of slivers made in the grinder room. Changes were made in the grinding and sharpening methods—and a slight improvement attained. Considerable work is yet to be done here. The next, and for the present, most interesting work was done in an attempt to make into fiber suitable for news the rejections from the screening system.

The Hudson river has periods of very low water, when no groundwood whatever can be produced for considerable periods of time. For this reason, in order to supply the demands of the paper mill, the groundwood mill is run for maximal production consistent with a satisfactory product and there is consequently a considerable amount of slivers. These had been previously wasted, or used for very coarse wrapper, or sold for such price as they would command.

Experiments were therefore begun looking to the establishment of a closed system, from which no coarse stock should go to the river. When work on this problem was begun, there were, so far as could be learned, no groundwood mills in this country, running with closed systems, for which striking success was claimed.

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[1] Read before the Technical Section of The American Paper and Pulp Association at the meeting in Grand Central Palace, New York, September 23, 1915.

Some mills were working their slivers down to a point where they could be used for board. Investigation showed that they were stopping work on the stock when it was much to coarse for news.

It was decided to try out a horizontal shaft refiner having one rotating stone floating between two nonrotating stones, the grinding surfaces being forced toward each other by a water cylinder. It was believed that such machines would be better adapted to the problem in hand than other types of refining engines. The reasons for this choice were that such refiners give continuous operation, require no storage for stock, cause no sudden changes in quality ot mill output due to intermittent injection of quantities of refined slivers, waste no power in moving thick stock, require little space and supposedly require a minimum of attendance. A single machine of this type was ordered in January, 1912, and duly set up. Instructions were given, in unquestionable good faith, that the machine would feed properly if the stock were supplied to it by gravity, so a thickener was set up over it. It was stated that its capacity was about eight tons every twenty-four hours; and that twenty hp. was required to drive it. However, as two and a half hp. to the ton seemed too good to be true, a fifty hp. motor was provided, and a meter in the motor circuit. The stock was rejections from the entire screening system, after passing the first sliver screen with ¾ in. holes.

As received from the manufacturers, the machine had in the grinding faces, cut grooves, apparently adapted from the ancient mill stone. These were far enough out of the true radial to prevent them from locking.

The machine was so designed that stock was admitted through the center of the stationary stone on one side, and it then worked radially out through the two grinding surfaces between the rotating stone and the stationary ones. The outlet was at the top of the case.

Before water pressure was applied, the machine filled with stock and discharged freely. The pumping action was very strong. When water pressure from a system carrying about 30tb was admitted, the stones moved together, promptly seized solid, the meter went to about 80 hp. and the belt slid off. The relief valve provided to prevent excess pressure was reset, and many attempts made to make the machine actually grind. They all resulted in running off the belt or blowing the motor fuses. About a week was spent in this futile way, and a conclusion was reached that the seizing was due to the refusal of the machine to feed when enough pressure was put on to make any visible impression on the slivers. When these difficulties were reported to the makers, they immediately offered to cable across for an expert and he presently arrived. He made some changes in the placing of the grooves, in an attempt to make the machine feed; and he stated that the machine had been successful abroad, but that the stock supplied was much less free and rough than the material furnished in the present case. Later experiences have convincingly shown that this was one of the causes of trouble. The difficulties still remained, and apparently some development work was yet to be done.

The single machine was obviously of too small capacity to give appreciable results in a 140-ton mill, so three more machines similar to the first were ordered in February, 1913, as the writer still believed in the merits of the continuous machine. These were set up with individual motors having circuit breakers and meters in their circuits, so that the power input could be observed. And another attempt was made to distribute the stock between the four machines by a screw conveyor over the top. This arrangement worked nicely with very thin stock, but the refiners did no work on such stock. When the stock was thickened up to a proper consistence, it would not distribute, and the refiners refused to take it. First one belt would go off and then another. In short, our previous experience was repeated. In addition to the tendency to plug, it was further noticed that the machines would at times draw much more stock than they could ever grind.

The next move was to provide individual single cylinder positive plunger pumps, whose office was to force a steady stream of stock, neither too much nor too little, through the grinding surfaces, thus preventing the stoppage of stock in the refiners. The relief valves as a means of regulating water pressure were discarded, and a standpipe erected, with overflow at different heights. A drizzle of water into the top of this pipe made up for packing leakage and maintained a slight overflow, thus providing a source of unchanging pressure. The screening system was so modified that the stock had all come through an .018, or smaller, slot. The machine fed much better, and by close attention could be kept in operation for some time; but the power fluctuated in an unaccountable manner, and the stock from the refiners showed that very little work had been done on it. If the power was run up to 50 or 60 hp. considerable effect was noticed, but the stones would seize every few minutes and the breakers go out. Several days of this developed the fact that the pressure-operated stone seemed to be moving in very fast, and when the machines were opened it was found that nearly an inch had been worn off one pair of grinding faces, usually the front one, while the other pair showed no wear at all. Obviously the stock had not divided, but had all gone through on one side. The power had been consumed on the other side in grinding up perfectly good and very expensive lava stone. As the grooves were now apparently a detriment, since they caused a pumping action tending to quickly force the stock out of the grinding zone, the stones were taken to the shop and the grooves all turned out. There was another and important reason for doing this. It seemed highly desirable to so operate the machines that the grinding faces would wear to a permanent condition, in which they would remain indefinitely, and then by other means bring the machines up to the required power capacity. This would mean a uniform grinding condition instead of the continual change which took place when dependence was placed on burring or cutting a grinding face on the stones, and would reduce labor and stone costs.

The next trial showed a considerable improvement, but there was still a tendency for the stock to divide unevenly; this can apparently be accounted for by the difference in areas subjected to pump pressure, when one side was open to stock and the stones were in contact on the other side. After a period of discussion, and a length of time necessary to stir up the necessary courage, it was decided to close up the spider on which the rotating stone was mounted, and duplex the pumps. Separate discharge pipes were provided for the two pump cylinders, one going to the old inlet, and supplying stock to one of the grinding areas, and the other pipe going to a new opening on the other side and supplying the other pair of faces. This arrangement was expected to give an independent positive flow at a predetermined rate, through each of the grinding surfaces.

This last change produced a most noticeable improvement, and after details were properly worked out, the refiners showed their ability to make fiber. Safe running was now dependent upon the proper performance of the pumps. If they did not miss strokes the refiners would run continuously with a fairly uniform load. If, due to an obstruction under a valve, the pump cylinder on either side missed a stroke or two, the stones ran together and tripped the circuit breakers. A continuous run of several hours was not unusual. Neither were frequent shutdowns unusual. Although the wear on the stones was only a small fraction of what it originally had been, there was still some wear, and the effect of it was to form concentric circles in the grinding face. After several months it became necessary to take down the machines and turn off the faces of the stones.

When at last the four machines were in shape to run, the system was closed by simply discharging the refiners back into the general system. This, of course, meant that any dirt which had previously floated off the flat screens or had been screened out would find its way into the sheet, so extra precautions were taken in the preparation of wood. As it proved best not to carry the regrinding too far at a single pass through the refiners, a large proportion of slivers was returned to the general system, which now carried several times as many as when fresh stock only was screened. Extra screening capacity to the extent of about forty tons was accordingly added. This situation also showed that a flat screen, even with plates in good condition would, if fed with stock containing a large proportion of slivers, accept so many that the accepted stock was not fit for a sheet of news. The centrifugal and rotary screens having perforated plates proved surprisingly free from this trouble.

To properly close up this paper, there should be a string of conclusions. Unfortunately, all of this development work was done out of immediate necessity, and the determination of exact quantities, studies of the effect of the different variables upon the quality of the product, and other work not essential to the operation of the plant, have been so far postponed. For this reason you may consider the following statements as the personal opinion of the writer, and accept them for what they are worth.

1—Groundwood slivers should be refined at a consistence of not less than 3 or 4 percent, and at a temperature of 120° to 150° Fahr.

2—Refiners are usually credited with much more capacity than they really have. This is due to the practice of returning the refined stock still containing a large proportion of coarse material to the fine screens, and as such coarse material may make several rounds of the system, a considerable quantity works through the screens. The refiners are credited with this quantity, being blamed for the actual making of coarse, poor quality fiber, when in reality the screening system is at fault for this condition. To remedy this situation, the refining system should have its own screens, so that when the slivers have been once taken out of the fresh stock from the grinder room, they will never be returned to it again.

3—The maximal unit pressure possible with the machines under discussion was only about one-fifth of the unit pressure used in the grinder room. While it is obvious that partly ground stock requires a lower unit pressure than solid wood, experience showed clearly that the general effectiveness of the refining operation increased rapidly with increasing pressure up to the point where the refiners would refuse to accept stock. The writer would look for much better results with a pressure on the grinding surfaces of not less than 10lb per square inch, and possibly much more.

4—The actual yield of news stock from clean, well screened slivers will be about one ton per 25 to 40 hp. used, depending on local requirements. This is a long way from some of the claims made for this class of machinery.

5—The ideal refining process is neither pure grinding, as in the case of the stone roll beater, nor pure crushing as would be the case if a set of rolls were used, but a combination of the two, somewhat on the order of the work done by the kollergang. It should, however, be possible to vary the relative proportions of these actions in order to produce the proper fiber. Uniformity of condition of the grinding surface, day in and day out, is absolutely essential. Good results need not be expected from a system which requires frequent recutting of the grinding faces.

6—No attempt should be made to reduce all of the coarse material at one passage through the refiner. Such operation will result in high power consumption, and the production of a high proportion of flour.

7—A screening system, which is adequate to handle the output of a mill when slivers are sent to the river, will prove entirely inadequate when running on a closed system. More screens must be provided, preferably as a special system for the refiners only.

8—It is most important that the feed of stock into the grinding area shall be positive and uniform, and that the quantity shall not exceed a definite amount, determined by experiment, upon which the machine does the most effective work. An excess of stock holds the grinding surfaces too far apart, and the slivers are simply rolled about instead of being separated into fiber.

9—The ideal refiner for groundwood slivers should be of such design that it can be fed at a predetermined uniform rate and with stock of any desired consistence, even up to 5 or 6 percent. The feed should be positive, it should not be necessary to deliver the stocks under pressure, and the machine should not refuse the coarsest pieces which pass the coarse silver screen. The abrasive should not glaze, and should therefore not require frequent dressing. It should be of a material which can be produced in this country. The value of sturdy mechanical construction and good lubrication should also be emphasized.

Propitious Beginning of Technical Section

[*From Paper Trade Journal, September 30, 1915*]

The atmosphere created by the National Exposition of Chemical Industries, at Grand Central Palace, New York City, during the past week, was fitting and inspiring and peculiarly well adapted to ensure a successful meeting of the Technical Section of the American Paper and Pulp Association. And the meeting of the latter organization which was held on September 23, can be considered in more ways than one, as having been a propitious and meritorious event in the current epoch of papermaking. Perhaps the most valuable benefit resulting from the session is the fact that the need of a body of this kind was realized to a degree surpassing that which has ever yet been conceived.

The realization of the splendid achievements which might be accomplished by bringing together into one organization the technically trained brains in the industry, represented by this division was emphasized by the papers which were read and by the ideas which were suggested for the general welfare of all those concerned.

Cooperation and standardization—cooperation in solving the various problems with which its members were laboring, and standardization of chemical tests and mill control—these are two of the needs which have long been sought in the trade, and these are the two functions which the new section purposes to initiate and perfect as soon as possible.

There was no lack of enthusiasm throughout the meeting. The attendance was large and representative and the discussions which followed the reading of the various papers was animated and interesting.

Experimental Work on Soda Cellulose[1]

The Diminishing of Fuzz in Soda Pulp by Proper Cooking Conditions

By SIDNEY D. WELLS

Engineer in Forest Products, Forest Products Laboratory, Madison, Wis.

In the production of soda pulp from deciduous woods such as poplar, cottonwood, gum, soft maple, etc., the main object in view is usually a soft, easy bleaching pulp, suitable for use in the production of book, litho, halftone and similar papers. In the average mill there is no way of determining the yield of pulp obtained per cord of wood except by calculating back from the output of paper and often the amount of wood used is only determined by the taking of the periodical inventory. The items, therefore, that come most forcibly to the attention of the pulp mill superintendent are the consumption of bleaching powder, lime and soda ash, and since bleaching powder is the most expensive item of the three, more attention is given to securing a thoroughly cooked pulp than to the securing of a large yield or the maximum length of fiber. The cooking of pulp more, rather than less, than is necessary often brings about a complaint from the papermaker that he is troubled with "fuzz" or "dog hairs" in making supercalendered paper and he can not get the desired finish. If the paper goes on to the printer he, in turn, complains that his type is being clogged.

In overcoming this trouble by altering the cooking conditions it is desirable to do so without increasing the amount of bleaching powder necessary to bring the pulp up to color. This can not be done by cooking the wood less severely, since by so doing the bleach necessary to bring the pulp up to color is increased, as is shown in the accompanying curve, reproduced from a work by H. E. Surface, where the yield of pulp may be taken as a measure of the severity of the cooking conditions. It is therefore apparent that the only solution is to determine what cooking conditions contribute most to fuzziness in the pulp and eliminate their effect as much as possible.

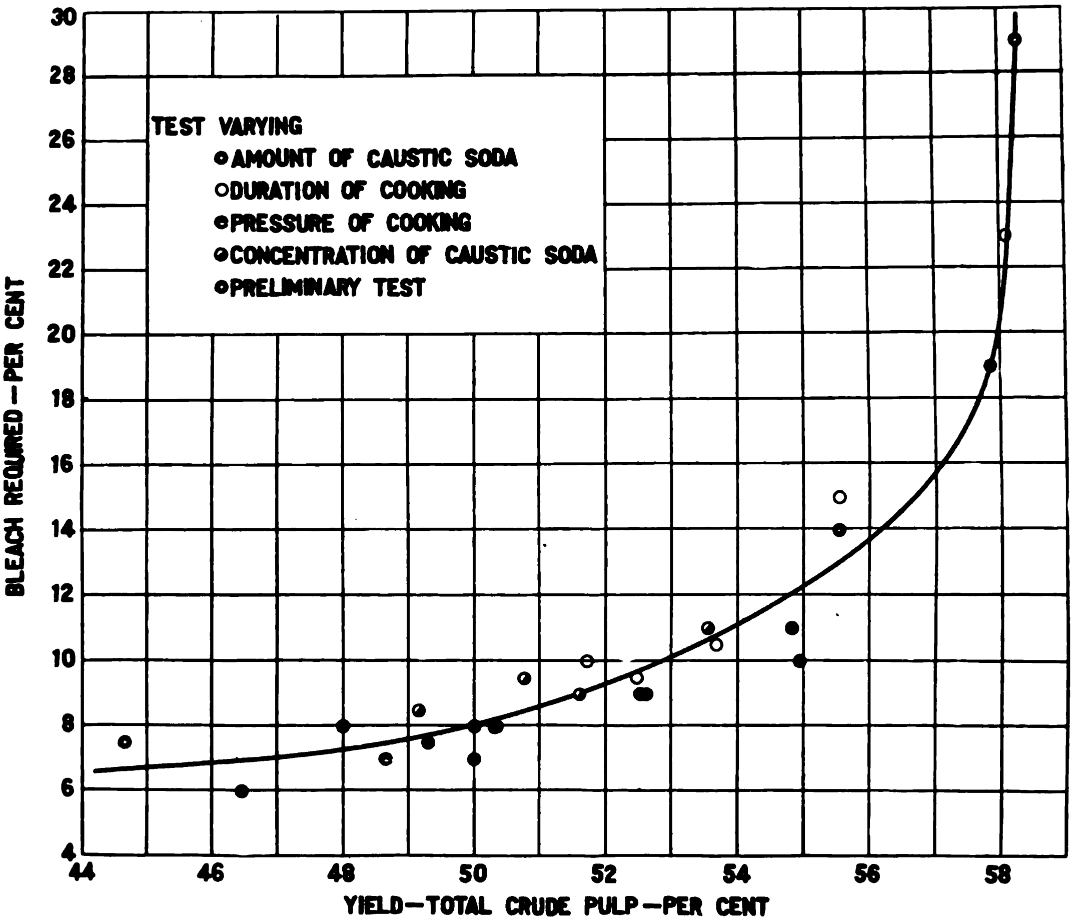

FIG. 11, PAGE 24, BULLETIN 80, U. S. DEPARTMENT OF AGRICULTURE. "EFFECTS OF VARYING CERTAIN COOKING CONDITIONS IN PRODUCING SODA PULP FROM ASPEN" by H. E. SURFACE

With this object in view, pulps were taken of nine cooks made under different conditions but which resulted in yields between 48 and 51 pounds of pulp per 100 pounds of poplar chips and which were capable of being brought up to color with from seven to nine and a half pounds of bleaching powder (35 percent available chlorine) per 100 pounds of pulp. These pulps were made in a stationary digester of sixty gallons capacity and heated by direct steam, the cooking and subsequent operations being conducted similarly to the common commercial practice. The screened pulps were run into a sheet about 0.010 inch thick on a fourdrinier paper machine and the sheets compared for fuzz by brushing the felt side of each an equal number of times with a stiff brush and examining in light reflected from a horizontal mirror. In the following table they are listed in the order of their apparent fuzziness, the important cooking conditions, yield and amount of bleach necessary also being given. The pulp appearing least fuzzy is from Cook No. 25 and that from each succeeding cook appeared more fuzzy, with the pulp from Cook No. 1 appearing the worst.

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[1] Read before the Technical Section of The American Paper and Pulp Association at the meeting in Grand Central Palace, New York, September 23, 1915.

Cook No.	NaOH per 100 lb. chips	Concentration NaOH in digester at beginning of cook	Maximum steam pressure	Duration of cook at maximum steam pressure	Yield of bone dry screened pulp per cwt. bone dry chips	Bleaching powder (35% available Cl) necessary to bleach per cwt. pulp
	Lb.	Grams per liter	Lb. per sq. in.	Hours	Lb.	Lb.
25	25.0	70.0	100	7.0	50.8	9.5
17	25.0	80.0	120	7.0	48.7	7.0
10	24.9	80.0	100	11.0	50.3	8.0
18	25.0	80.0	110	6.9	50.0	8.0
23	25.0	110.0	100	7.0	49.2	8.5
3	26.8	79.7	100	7.0	49.3	7.5
2	26.8	80.5	100	7.0	50.3	8.0
5	35.1	80.2	100	6.0	50.0	7.0
1	35.1	78.0	100	7.0	48.0	8.0

On examining the table it can be seen that the pulps appearing most fuzzy (Cooks 1 and 5) were made with a large amount of caustic soda while where the excess was cut down and the lack of excess counteracted by either an increased concentration, a higher steam pressure, or a longer time of cooking, the tendency toward fuzz was materially decreased. The reason for this phenomenon is probably that with the lower soda content there was less attack of the pulp after the early stages of the cook because the soda was more nearly used up, and while the cook was progressing on the interior portion of the chips due to the greater concentration of the liquor that had been forced in, or the higher temperature or longer cooking period, the pulp that was already formed on the outer portions of the chips was not being attacked by an excess of unused soda.

The foregoing observations are based on the characteristics of the pulps obtained in the cooks listed and the indications seem sufficiently marked to make them appear definite. In order to illustrate their application it will be of interest to consider a hypothetical case.

The conditions given under Cook 1 using the laboratory apparatus would ordinarily give a pulp that would be troublesome on account of fuzz. In order to decrease the amount of soda used and at the same time cook the pulp as thoroughly, it is necessary to either increase the time of cooking, steam pressure, or concentration of the cooking liquors. Since an increase in time would entail decreased production, this alternative is not considered. By increasing the steam pressure from 100 to 110 pounds per square inch as shown in Cook 2, or the concentration from 100 grams per liter to 110 grams per liter as shown in Cook 3, and decreasing the caustic soda used from twenty-five pounds to twenty pounds per hundred-weight, of chips, and equally well cooked pulp would be obtained with the same yield and ease of bleaching. The fuzz, however, would be materially diminished. Moreover, the saving in caustic soda would much more than cover the increased fuel necessary to produce the increased steam pressure in the one alternative or the slight increase of lime necessary to produce the increased concentration of caustic soda in the other.

Cook No.	NaOH per cwt. bone dry wt.	Concentration of NaOH in cooking liquor	Hydrometer reading at 100° F.	Duration of period for coming up to pressure	Duration of cook at maximum pressure	Maximum steam pressure	Yield screened unbleached pulp per cwt. chips bone-dry weight	Bleach required per cwt. pulp (bone-dry weight)
	Lb.	Grams per liter	Degrees Baumé	Hours	Hours	Lb. per sq. in.	Lb.	Lb.
1	25	80	11	2	7	100	50	10
2	20	80	11	2	7	110	50	10
3	20	110	14	2	7	100	50	10

Venezuelan Paper Made from Aquatic Plant

THE paper mills at Maracay, Venezuela, reference to which was published in *Daily Consular and Trade Reports,* January 27, 1913, is about completed and Consul Homer Brett, La Guaria, says it is expected to be in operation before the end of the year.

The building is of Venezuelan cement, the roof of Belgian galvanized iron and all the papermaking machinery is from the firm of Fullner, of Warmbrunn, Silesia.

Only the motive power is American. This consists of a hydro-electric installation at Cheroni which will develop 300 horsepower in the wet and 200 in the dry season. To date, 950,000 bolivars (bolivar=$0.193) have been expended on the plant. The raw material consists of an aquatic plant which grows in great quantity on the margins of Lake Tacarigua.

Afternoon Session of the Technical Section

Continuation of the Papers and Discussions at the Meeting on September 23

FOR reasons explained in the preceding issue, the afternoon sitting of the meeting was delayed for thirty minutes after the advertised hour of opening. After Chairman Fletcher had called the gathering, now augmented by a crowd of visitors, to order, he introduced Frank G. Wheeler, chemical engineer of the Kimberly-Clark Company, who gave a highly technical, but interesting account of the operation of electrolytic cells as used in bleach plants, with special regard to economy and efficiency.

THE CURRENT CAPACITY OF CELLS IN ELECTROLYTIC BLEACH PLANTS

Mr. Wheeler explained that in those mills which operate electrolytic bleach plants, it was frequently a puzzle to know the economical point at which to carry a current through the cells to get the best efficiency. The question was whether to install more cells and carry less current or to install fewer cells and carry a greater current on the cells.

In explanation of his method of making the charges of the overhead and the cost of the power functions of the current, Mr. Wheeler caused a number of lantern slides of charts to be projected on a screen. Production in bleach plants was, he said, always proportioned to the current employed, and the power used could be made a function of the current. Then, by taking the cost of the plant, that is, the cell and its length of life; the cost of the building, together with charges for depreciation and fixed charges, taxes, insurance, etc., the overhead could also be made a function of the current, because it was a function of the production.

The remainder of his remarks, which will be published later as a separate paper, with charts and diagrams, were in elucidation of his thesis.

CURRENT CAPACITY *versus* VOLTAGE

Mr. Wheeler's paper was informingly discussed by Martin L. Griffin, who spoke as follows:

"I remember about two or three years ago, at a meeting of the American Electrochemical Society at the eighth annual meeting of the International Congress of Applied Chemistry in this city, a certain Dr. Wilderman told us he had us all beaten on electrolytic cells. [See PAPER, December 11, 1912.] His cell as all of you who know anything about it are aware, was quite an intricate affair; vertical troughs and so forth, and he went on to show what a high current his cell would carry, illustrated by diagrams on the screen. I was not very familiar with the process at that time, but later, when I looked over his patent claims, I saw that he was claiming a voltage of about 7. It is easy to make all kinds of claims for the high current capacity of cells, if nothing is said about the voltage, but his case was readily disposed of by his own figures, for after a careful reading it was seen that his cell would take only seven volts.

"The subject is a very interesting one. It is a question of the balance, very largely, between the resistance and the current which you can carry. Of course, the whole product depends upon the current. In regard to the matter of overhead charges and cost of repairs, etc., that is always problematical. I do not know, except in a few cases, where the life of the business has been long enough to predict just about what is a good fair estimate. However, it is safe to say we have several large corporations operating electrochemical plants, and I think it would not be very difficult to obtain some such information from them."

Max Cline, of the International Paper Company, was then asked to present his paper on "The Possibilities of Accurate Determination of Groundwood in Papers," on which he was highly complimented on the score of its scientific value. This paper was printed in full in the preceding issue of PAPER.

Following a brief discussion of Mr. Cline's paper by Mr. Griffin and Chairman Fletcher, H. P. Carruth, of the American Writing Paper Company, delivered an address on "The Relation of Ink and Paper in Halftone Printing," which was illustrated by numerous lantern slides.

The Dyestuff Situation in United States

By I. F. STONE

Following the paper by Mr. Carruth, the chairman introduced I. F. Stone, president of the National Aniline and Chemical Company, New York, who gave an extemporaneous address on "The Dyestuff Situation in the United States." Mr. Stone said:

Mr. Chairman and Gentlemen: I am very pleased to appear before you this afternoon to say what I can in connection with the dyestuff situation in the United States.

You are all of you more or less familiar with the situation, if you have kept in touch with the newspapers and with public opinion on the subject in general. You all know it is impossible to secure at this time anything like a sufficient quantity of dyestuffs. The question is therefore what to do.

There are only two things that are possible. One is to secure a shipment from the other side, from Germany, and the other is to arrange with American manufacturers to make these colors for you.

At the time of the war, or prior to the war, the German factories furnished this country 80 percent of all the colors which were consumed here, and the American manufacturers only 20 percent. When the war began, the colors were shut off, leaving a shortage of at once 80 percent of the colors, less whatever stock was on hand at the time the war started.

The consumers of colors immediately commenced to call on the American manufacturer for supplies. The American manufacturers, most of you probably know, made colors from intermediate products which they got from Germany. Therefore after the war started, and an embargo was put on these intermediate materials, they got no more of their materials from Germany, and only had on hand the stock which they had before the war.

Obviously, then, the only thing they could do to make colors was to make those intermediate materials. I presume most of you know that the raw material of all aniline dyes, is benzol, which is produced in this country, but the intermediate materials like aniline oil are made in Germany, because they can make them cheaper there than we could make them here. There is one exception to that statement, and that is a concern started about three years ago, the Benzole Products Company, to make aniline oil, but they only produced about one-quarter of the usual consumption. At any rate, as soon as an embargo on these raw materials was put on by Germany, we got nothing from the other side.

Now, the thing to do was to take the benzol and make our own raw material. Benzol is produced in this country now very largely on account of its demand from the manufacturers of war materials. It is used for explosives and ammunition. The production has enlarged from three million gallons before the war to about fifteen million gallons at this time. In spite of that, however, the price of benzol is still high, because the bulk of that new production goes to the other side, either direct or in the form of ammunition. We are therefore compelled to pay for benzol about 75 cents a gallon against a normal price of 20 cents a gallon; about four times our cost of raw material to start with, and that is only one of a number of raw materials which we use in making aniline dyes. The others have all advanced in proportion. It would seem therefore that the American manufacturers could manufacture for you, the paper trade, such colors as you want, and they could under ordinary circumstances.

There is, however, one color which is used largely by the paper trade, "paper blue," the largest of all the colors which we make for the paper trade, or which is used for the paper trade, and which cannot be made at this time, and that is because the base material, called rosaniline, is made from toluidine, which in turn is made from toluol, which is a similar product of benzol, but recovered only in small quantities.

Owing to its demand, for war demand purposes, the toluol has gone up from 20 cents a gallon as high as $6.25—about thirty times its original cost. At present, we were offered it for next year at $4.25, which is twenty times the original cost of this material. If we were to make "paper blue" for you gentlemen, with a cost of $4.25 for our base material, or twenty times the normal cost, you can see at once that our price on the blue would be so high as to be practically prohibitive. None of you could afford to pay us, say five dollars a pound for a blue, for which you used to pay fifty cents a pound.

There is another color, metanil yellow, which is used largely in the manufacture of paper. Again, the raw material on that is so very expensive that the cost of the finished color would be prohibitive. We are forced to pay one dollar a pound for a raw material called diphenylamine which we formerly paid 17 cents for, and now it costs a dollar. That means about five times the original price, and to make metanil yellow from that product at this time would make a selling cost of about $1.25, which is five times the regular price.

Again, we do not feel that the paper trade can afford to pay so much money for this color. Now, the proposition is this: The American manufacturer can make "paper blue" as they can make metanil yellow, but in order to do so, they have to make a contract for their raw materials running over a year, at these enormously high prices. If the buyers of "paper blue" and metanil yellow were willing to make contracts over that year to take what we made based on the prices of our raw materials, it might be done; in fact, it could be done, and it is for you gentlemen to think over whether you will be prepared to do something of that sort. It so happened a few years ago that all of the colors, or practically all of the colors used by the papermakers, were made in the United States. In fact, at out factory, in Buffalo, say fifteen years ago, we depended almost entirely on the paper trade. We made Bismarck brown, metanil yellow, fuchsine and orange and fast red, and a line of colors you all used.

It so happened, however, on the "paper blue" that two or three years ago a combination color made from methylene blue and methyl violet was adopted by almost all the large paper mills because they found it cheaper, and to their mind better than the ordinary paper blue. For that reason, it was adopted, and the use of paper blue practically given up for that class of trade. That was one of the reasons why, at the beginning of the war, we did not have a larger stock of the raw material to make the paper blue than we did, so when the war started, after we had made up from our stock what we could, we had practically nothing left; today we do not feel like making paper blue again for the reasons I have just given you. We do not know whether you will pay that price for paper blue or whether you would prefer to have us make the methyl violet and methylene blue combination, which could be made, under the circumstances, at not so high a price. The American factories are making Bismarck brown, chrysoidine and orange and azorubin. But such colors as auramine, rhodamine, methyl violet, methylene blue, malachite green or victoria green, have never been made in the United States, although they can be made here, but again, the cost would be almost prohibitive, based on the present cost of raw material.

As far as the paper trade is concerned, therefore, I think the chances are very poor for their securing any supply of colors for a long time to come. We are not in a position to take them up for the reasons I have given you. There is no chance that I know of of getting any from Germany. That is an international question based on whether or not we can send over there cotton or foodstuffs, and I think it is very remote.

ADVOCATES A PROTECTIVE TARIFF

Now, what might be done in the aniline dye business in the United States would be with the help of the Government. If they would assure us of a protective duty which would enable us to make colors and compete with Germany under normal conditions, then we might take a chance of going into all of these colors even at the high prices, knowing that even if the prices declined, we could still sell our colors against competition, which we could not do now, and I venture to say, inside of a year we could make for you, speaking for all the American manufacturers, all the colors you would need to use, and it is a question whether the paper trade is ready to support us in our attempt to secure this necessary legislation. I might say that the National Underwear and Hosiery Association, who are very large consumers of colors, more than the paper trade, have passed such a resolution recently. Otherwise, many of them will have to shut down, if they cannot get supplies.

That, gentlemen, is the position of the aniline color industry in this country at the present time, and as I said a few minutes ago, there is no chance that I can see of your getting any relief except on those four or five colors, brown and yellow and chrysoidine, for a long time to come.

I understand some of the papermakers have been using soluble Prussian blue, but that has gone up to a dollar and a quarter a pound, or something of that sort, and is very scarce, and will have to be given up.

Whether you have evolved any new blue to use, I do not know, but I am wondering what the big print manufacturers will do to tint their paper, so it will be white, and not a yellow color, which it would be otherwise. As I said before, the easiest thing for us to make would be methyl violet and methylene blue, and give you a combination. It could be done more economically than a blue, and as I said, it might be done under certain conditions, if we had some promises from the Government that we would be protected in case the war ended suddenly, and would not be left with a high priced lot of raw material, and an expensive factory on our hands.

That is the whole story, gentlemen, and what we would have to have, in order to bring the American industry to a point where it can serve all the people, and this can be done if a proper tariff is established.

CHAIRMAN FLETCHER—We wish to thank Mr. Stone very much for explaining to us the true situation, which I think a good many of us realize today is very serious.

We will follow up with the last paper, which is on "The Diminution of Fuzz in Soda Pulp by Proper Cooking Conditions," by S. D. Wells. Mr. Wells unfortunately was unable to come, and Dr. Otto Kress will read his paper in his place.

The text of Mr. Well's paper will be found on page 14 of this issue of PAPER.

This paper will close the programme for this meeting of the Technical Section, and I want to thank you all for your cooperation, and all those who have taken part in the proceedings.

I only hope that at the February meeting we will have an even larger attendance than we have had at this meeting.

LIST OF MEMBERS

The following list of members of the Technical Section of the American Paper and Pulp Association is revised to September 29, 1915. For the convenience of committees, the position held by members in mills and offices is given after their names, and this is followed by the business address of their employers.

Directory of the Technical Section, A. P. & P. A.

Andrews, D. C., superintendent of sulphite mill, Northwest Paper Company, Cloquet, Minn.

Ault, Robert A. G., general manager, Schmidt & Ault Paper Company, York, Pa.

Bacon, Charles B., assistant chemist, Bureau of Standards, Washington, D. C.

Baker, W. E. Byron, chief chemist, York Haven Paper Company, York Haven, Pa.

Barker, E. R., chemical engineer, 79 Milk street, Boston, Mass.

Barlow, Cone, chemical engineer, Munising Paper Company, Munising, Mich.

Beadle, Warren E., superintendent of Biron mill, Consolidated Water Power & Paper Company, Grand Rapids, Wis.

Bellinger, D. L., mechanical engineer, Finch, Pruyn & Company, Inc., Glens Falls, N. Y.

Berger, Ole Ludwig, superintendent of sulphite mill, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Beveridge, F. Norman, general superintendent, Dryden Timber & Power Company, Dryden, Ontario, Canada.

Bishop, Henry H., secretary, Wrapping Paper Manufacturers' Association, 18 East 41st St., New York City.

Boyd, Chas. S., manager, Appleton Coated Paper Company, Appleton, Wis.

Brassington, J. W., engineer, service department, mill reports, Pusey & Jones Company, Wilmington, Del.

Bright, Charles G., chemist in charge of main laboratory, Kimberly-Clark Company, Neenah, Wis.

Brooksbank, C. B., superintendent, Cherry River Paper Company, Richwood, W. Va.

Brownell, William H., mechanical engineer, York Haven Paper Company, York Haven, Pa.

Caldwell, Wintrop E., efficiency engineer, American Writing Paper Company, Holyoke, Mass.

Campbell, William J., superintendent groundwood department, Northwest Paper Company, Cloquet, Minn.

Carrigan, John F., chief engineer, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Carruth, Henry P., chief chemist, American Writing Paper Company, Holyoke, Mass.

Clark, Frederick C., in charge of paper laboratory, Bureau of Standards, Department of Commerce, Washington, D. C.

Cline, Max, chemist, Bureau of Tests, International Paper Company, Glens Falls, N. Y.

Curtis, Frederick A., chemist, Aetna Paper Company, Dayton, Ohio.

Davis, John F., superintendent, Beckett Paper Company, Hamilton, Ohio.

Davis, M. J., chemist, Taggart Bros. Company, Watertown, N. Y.

Davis, W. L., Jr., assistant superintendent, Dells Paper & Pulp Company, Eau Claire, Wis.

Douglass, Harry Edwin, chemist, Fletcher Paper Company, Alpena, Mich.

Drake, Chester W., industrial engineer, Westinghouse Electric & Mfg. Company, Chicago, Ill.

Dunn, Theo. W., vice-president and general superintendent, Detroit Sulphite Pulp & Paper Company, Detroit, Mich.

Eliason, Harry D., assistant manager, Geo. F. Shevlin Mfg. Company, Saratoga Springs, N. Y.

Everest, D. C., secretary and general manager, Marathon Paper Mills Co., Rothschild, Wis.

Felton, Albert, chemist, Parsons Pulp & Lumber Company, Parsons, W. Va.

Ferguson, George K., chemist, Watervliet Paper Company, Watervliet, Mich.

Fletcher, Henry E., secretary and general manager, Fletcher Paper Company, Alpena, Mich.

Frank, Joseph J., assistant manager, Ancram Paper Mills, 136 West 21st St., New York City.

Franke, K. W., chemist, Hinde & Dauch Paper Company, Sandusky, Ohio.

French, Hobert W., chemist and engineer, Tileston & Hollingsworth Company, Hyde Park, Mass.

Gleason, E. P., assistant engineer, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Goodnow, W. W., assistant treasurer, Fort Orange Paper Company, Castleton-on-Hudson, N. Y.

Green, Arthur B., industrial engineer in charge of standard time department, S. D. Warren & Company, Cumberland Mills, Me.

Gschwender, Ernst, draftsman and engineer, Detroit Sulphite Pulp & Paper Company, Detroit, Mich.

Guettler, Herbert, manager, American Barking Drum Company, Chicago, Ill.

Guild, Henry J., scientific investigator, Eastern Mfg. Company, Bangor, Me.

Hammond, Harry B., sales engineer, Westinghouse Electric & Mfg. Company, 165 Broadway, New York City.

Hatch, Raymond S., general superintendent, Crocker McElwain Company, Holyoke, Mass.

Haug, Anton Joseph, engineer, Improved Paper Machinery Company, Nashua, N. H.

Haynes, Edward A., general manager, Port Huron Paper Company, Port Huron, Mich.

Hedden, Morris W., chemical engineer, Crown-Willamette Paper Company, West Linn, Ore.

Heritage, Clark C., chemical engineer, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Hoppenstedt, Alfred W., proprietor, A. W. Hoppenstedt Laboratory, Perry and Mississippi streets, Buffalo, N. Y.

Hyatt, Frank Reed, first mechanical engineer, Bureau of Tests, International Paper Company, Glens Falls, N. Y.

Keenan, Thomas J., editor of PAPER, Paper, Inc., 117 E. 24th street, New York City.

Kelly, G. B., foreman, paper department, Marathon Paper Mills Co., Rothschild, Wis.

Ketchen, Wm. L., construction engineer, Riordon Pulp & Paper Company, Ltd., Hawkesbury, Ont., Canada.

Kleiner, E. G., chemical engineer, 96 Maiden Lane, New York City.

Klund, F. P., assistant secretary and mechanical engineer, Hammermill Paper Company, Erie, Pa.

Knudsen, K. Hv., chemical engineer, 96 Maiden Lane, New York City.

Kress, Otto, in charge, section of pulp and paper, Forest Products Laboratory, Madison, Wis.

Laue, Heinz C., night superintendent of sulphite mill, Cherry River Paper Company, Richwood, W. Va.

Lauroesch, Hugo V., chemist, Defiance Paper Company, Niagara Falls, N. Y.

Lawrence, William J., manager, Western Paper Makers Chemical Company, Kalamazoo, Mich.

Lippincott, Wilmot C., chemist, Cherry River Paper Company, Richwood, W. Va.

Lunok, Sidney E., chemist in forest products, Forest Products Laboratory, Madison, Wis.

McKee, Ralph H., head of paper and pulp school, University of Maine, Orono, Me.

McNair, Clarence I., assistant to general manager, Northwest Paper Company, Cloquet, Minn.

MacNaughton, W. G., in charge of manufacturing, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

Macvie, Alexander W., chemist, Bryant Paper Company, Kalamazoo, Mich.

Mahler, Ernst, assistant general superintendent, Kimberly-Clark Company, Neenah, Wis.

Moore, Frank L., president, Newton Falls Paper Company, Watertown, N. Y.

Morse, Ernest C., commercial engineer and salesman, Westinghouse Electric & Mfg. Company, Boston, Mass.

Murphy, Thomas R. H., construction engineer, Bathurst Lumber Company, Bathurst, N. B., Canada.

Murray, James, chemist, Nashua Gummed & Coated Paper Company, Nashua, N. H.

Naylor, Alexander D., secretary-treasurer, American Paper & Pulp Association, 18 East 41st st., New York City.

Nixon, William L., general superintendent, Chemical Paper Mfg. Company, Holyoke, Mass.

Obermanns, Henry F., assistant to president, Hammermill Paper Company, Erie, Pa.

Patterson, D. H., Jr., general superintendent, California Paper & Board Mills, Antioch, Cal.

Paulson, Peter A., superintendent of sulphite mills, Kimberly-Clark Company, Neenah, Wis.

Rausch, Roswell H., engineer, Bureau of Tests, International Paper Company, Glens Falls, N. Y.

Rhodes, Charles F., superintendent, Bureau of Tests, International Paper Company, Glens Falls, N. Y.

Richardson, Wilbur P., assistant superintendent and chemist, Hinckley Fibre Company, Hinckley, N. Y.

Robertson, Reuben B., general manager, Champion Fibre Company, Canton, N. C.

Robertson, Winfred F., copartner, W. F. Robertson & Company, Hinsdale, N. H.

Robinson, William T., general manager, Parsons Pulp & Lumber Company, Parsons, W. Va.

Rothchild, Henry A., chemist, Kimberly-Clark Company, Kimberly, Wis.

Rue, John D., assistant professor of chemical engineering, University of Michigan, Ann Arbor, Mich.

Sanburn, Justus C., chemist, Strathmore Paper Company, Mittineague, Mass.

Schneider, Carl, color specialist, Knowlton Bros., Watertown, N. Y.

Scott, Douglas E., assistant chemist and experimental papermaker, Arthur D. Little, Inc., 93 Broad street, Boston, Mass.

Scott, Frank O., superintendent, Southworth Company, Mittineague, Mass.

Simon, Maurice W., secretary and manager of sales, Tonawanda Board & Paper Company, Tonawanda, N. Y.

Smith, Daniel A., general manager, District of Columbia Paper Mfg. Co., Washington, D. C.

Snell, Ralph M., manager, Paper Makers Chemical Co., Holyoke, Mass.

Spierling, Arthur O., assistant mechanical engineer, Hammermill Paper Co., Erie, Pa.

Sprang, Rudolph J., assistant superintendent sulphite and box board departments, Champion Fibre Company, Canton, N. C.

Steele, George F., secretary, Newsprint Manufacturers Association, 18 East 41st street, New York City.

Strange, Hugh, secretary-treasurer, John Strange Paper Company, Menasha, Wis.

Straus, Raymond I., secretary, Bedford Pulp & Paper Company, Richmond, Va.

Strepp, Ludwig, salesman, Badische Company, 128 Duane street, New York City.

Surface, Henry E., engineer in forest products, Forest Products Laboratory, Madison, Wis.

Taylor, Howard W., vice-president and general manager, Dill & Collins Company, Philadelphia, Pa.

Taylor, John M., assistant general manager, Diamond State Fibre Company, Bridgeport, Pa.

Thorne, C. B., manager, Riordon Pulp & Paper Company, Ltd., Hawkesbury, Ont., Canada.

Traquair, John, vice-president, Feculose Company of America, Ayer, Mass.

Uptegraff, Thomas M., secretary and manager, Defiance Paper Company, Niagara Falls, N. Y.

Van Alstyne, John, superintendent sulphite department, Rhinelander Paper Company.

Walker, Harold E., assistant manager and superintendent, John S. Moore & Son, Bellows Falls, Vt.

Wardle, Edward B., chief engineer, Laurentide Company, Ltd., Grand Mere, Que., Canada.

Weber, Wilhelm A. O., special instructor, International Paper Company, 30 Broad street, New York City.

Wells, Sidney D., engineer in forest products, Forest Products Laboratory, Madison, Wis.

Wheeler, Frank G., chemical engineer, Kimberly-Clark Company, Neenah, Wis.

Williamson, George E., chief engineer, Strathmore Paper Company, Mittineague, Mass.

Winslow, Carlile P., engineer in forest products, Forest Products Laboratory, Madison, Wis.

Wolf, Robert B., manager of manufacturing, Burgess Sulphite Fibre Company, Berlin, N. H.

Wood, Walter H., testing engineer, American Writing Paper Company, Holyoke, Mass.

Yoerg, L. M., superintendent, Carew Manufacturing Company, South Hadley Falls, Mass.

Zimmerman, Max, superintendent, Mac Sim Bar Paper Company, Otsego, Mich.

Constitution of the Technical Section

The Technical Section of the American Paper and Pulp Association is an organization of individuals apart from the activities of the parent association.

Article I. Name: This association shall be called the "Technical Section of the American Paper & Pulp Association."

Article II. Objects: The objects of the Section shall be

1—To stimulate interest in the science of pulp and papermaking.

2—To provide means for the interchange of ideas among its members.

3—To encourage original investigation.

Article III. Membership: There shall be two classes of members: (1) Members, (2) Associate Members.

1—Qualifications for Members: Any person who has had a satisfactory technical education or who, though not having had a technical education, has special qualifications and experience.

2—Qualifications for Associate Members: Any person who will assist and support the aims of the Technical Section of the American Paper & Pulp Association, and who, by virtue of his qualifications, is likely to further the work of this Section.

Associate members have all the privileges of the Technical Section, except voting and holding office.

3—Applications: All applications for membership must be made to the Secretary in writing and shall embody a concise statement with dates of the candidate's technical training and experience, and shall be in a form and in such detail as may be prescribed by the Executive Committee.

4—Election of Members: Each candidate for membership shall be proposed and seconded by members of the Technical Section and shall be voted on by the Executive Committee of the Section, a majority of whose votes shall be necessary for election.

The Executive Committee shall also decide as to which class of membership the candidate is entitled.

5—Honorary Members: Honorary members may be elected at any time by unanimous vote of the Executive Committee. They shall have all the privileges of members but without payment of dues.

6—Dues: The annual dues for associate members shall be $5.00, payable at the beginning of the calendar year.

A member who has not paid at the end of the year is suspended.

Article IV. Officers and Executive Committee: The officers of the Technical Section shall be a Chairman, Vice-Chairman, and Secretary-Treasurer, elected at the annual meeting by the members of the Technical Section for one year.

The Chairman and Vice-Chairman with three Committeemen shall constitute the Executive Committee of the Technical Section.

The present Executive Committee shall serve for one year, at the end of which time three members shall be elected as follows: one to serve for one year, one for two years and one for three years, and thereafter members of the Executive Committee shall be chosen annually for full term.

Retiring members of the Executive Committee are not eligible for reelection for one year. although they shall be eligible for the offices of Chairman and Vice-Chairman.

It is desirable that the Chairman, Vice-Chairman and three members of the Executive Committee be chosen to represent the various branches of the industry.

Vacancies occurring in any office shall be filled by a majority vote of the Executive Committee for the unexpired term.

The Chairman, Vice-Chairman and Secretary-Treasurer shall perform the usual duties of these offices.

The Executive Committee shall pass on membership, conduct the business of the Section between meetings and have general charge and control of the affairs of the Technical Section.

PAPER

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Overworking an Opportunity

FROM numerous sources have come complaints that certain dealers in aniline colors have taken advantage of the situation created by the European war and are exacting most unreasonable prices from paper manufacturers whose necessity compels them to procure colors at any cost.

The difficulty is not so much with regular and well established houses, which have been in the past largely supplying the trade, nor for that matter with the manufacturers themselves who may be reached, but rests mainly with certain individuals and companies which, realizing the speculative possibilities of the situation, have temporarily engaged in the trade for their own profit, without any regard to the interest of their customers or even their future goodwill.

It is merely a recurrence of what always happens when any useful and necessary article of trade ceases to be available to the extent of the demand. When the supply falls short, prices naturally and normally advance. Then it is that adventurers seize upon the opportunity to acquire as large a portion as they can of the available supply, and part with it only when they can obtain exorbitant prices which yield them profits out of all proportion to their risk or service.

Men who are engaged regularly as dealers in these commodities, and who have established friendly trading relations with a regular line of customers, are always considerate in such times and do not demand excessive profits. This course they pursue, first, because it is a matter of justice to their customers and, secondly, because it is good policy. They hope to retain the goodwill and the patronage of these people in the future when conditions become normal. In order to do this they must deal fairly with them in abnormal times.

Such incentives, however, do not influence the time-server and speculative adventurer who jumps into the business solely on account of the extraordinary opportunities that are offered, for the purpose of reaping such harvest as he may be able and then retire at the end of the season without caring whether he has the continued goodwill of his customers or not. And it is into the hands of such individuals that a considerable part of the available color supply has fallen.

This practice, while regrettable, is nevertheless just what we always expect under existing conditions, and is not, therefore, a matter of great surprise nor one that can well be obviated. There is, however, reason for indignation in the unscrupulous manner in which some of these people are reported as transacting their business, aside from the extortionate prices they demand.

It has come to our knowledge, through informants whose responsibility we do not question, that in many cases the colors which they offer for sale at these advanced prices are greatly reduced from the standard types which they purport to be. As an illustration of the extent to which these reductions and adulterations are carried on, a competent authority writes: "I have personally examined samples which barely affect the natural color of the paper when used in proportions which should have given fairly strong dyes. I have heard of instances where 90 percent and even 98 percent reductions have been made, and of one instance where an entire barrel of so called aniline dyes was required to get a moderate shade in a thousand pound engine."

Such practice as this is outrageous and utterly demoralizing to the trade; and the difficulty is that in most cases these temporary dealers are not only unscrupulous but financially irresponsible. They have time and again been known to take advantage of the urgent necessity of consumers and demand wire acceptance of their offers, and in some instances they absolutely refused to make good when the articles they sold failed to come up to representation.

How this deplorable situation can be remedied we are not able to say. It is one of the things for which there seems to be no definite or well-defined relief. We do feel, however, that the trade ought to be warned of the existence of such dealers and of their practice, and that the utmost caution should be used by paper manufacturers in purchasing color supplies.

Where it can be done at all, purchases should be made direct from manufacturers or through well known and long established dealers. If in the end the urgency requires that colors should be obtained from any other source, then, when purchases are made from unknown or temporary dealers, they should be made upon conditions that will at least require the furnishing of unadulterated dyes. It is bad enough to be required to pay unreasonable prices for supplies, much worse to procure inferior goods at such advanced rates.

Business Improvement

If due credit is to be given to the preponderance of testimony, the general business condition has undergone a decided improvement in recent weeks. The change for the better is not sufficient to justify marked enthusiasm, but is nevertheless exceedingly gratifying to all of us.

From the most reliable and unbiased sources we have assurances that conditions have become materially better. Recent statements of the National reserve banks comment most favorably upon the progress and the outlook of business. The National Bank of the Republic, of Chicago, in its monthly review of the financial situation, says:

> Evidences of permanent betterment in business are multiplying so rapidly that mere hope has given way to a conviction that the next twelve months will witness a very real prosperity and one which need not be synonomous with inflation. What remnants still remain of the spirit of ultra-conservatism in business may be ascribed to the psychological effect of war news, which, to say the least, makes dismal reading.
>
> True, dissensions arising from conflicts of policy of this and European governments are ever present, and, with the continuation of the war, likely to remain so. But American industry has arrived at a point where general expansion must naturally follow the liquidation of the past three years. The favorite speculation as to what might happen were the war to end suddenly has been replaced by a more widespread belief that even in that eventuality there would still remain the bigger opportunities of the reconstruction period which would naturally follow.

Recent reports of the Interstate Commerce Commission clearly indicate a marked increase in the traffic tonnage of the railroads. So much indeed has it increased that there is already talk in many quarters of a serious shortage of cars. Such shortage never occurs except when business is active.

This is the season of the year to be sure when normal industrial activity is expected to increase. Crops have in the main been gathered and are now being marketed; and we all know well that the fall of year usually witnesses a revival of effort in almost every line.

It is to be regretted that so much of the industrial activity of this country is in the manufacture of munitions of war. While, if war is to be waged, we are glad to have the opportunity to share in the meager benefits that may come from it, nevertheless every good citizen joins in the hope that the urgent and unprecedented demand for war materials will shortly disappear. The restoration of peace is greatly to be desired. So much so that no one could wish to have the war prolonged in order to make business for certain lines of industry.

There seems, however, to be a more general inclination than we have had for some time to enlarge our industrial efforts along those legitimate lines which are pursued in times of peace. That the country has grown tired of waiting for the settling of conditions to an extent that gives practical security to investments is evidenced by the fact that the European war loan of $500,000,000, recently negotiated in this country through the leading bankers, has been very largely oversubscribed. There is an abundance of money in the country, and those who have it will gladly put it in circulation when the uncertainties which have been so conspicuous are done away with or at least minimized.

Not a great deal of the improvement has come to the paper manufacturers, but general indications lead us to indulge the hope at least that even they may eventually participate to some extent in the bettered conditions.

U. S. Steel Corporation's Wisdom

A VERY SUGGESTIVE announcement was recently made through the *Wall Street Journal,* which not only discloses a wise policy pursued by the United States Steel Corporation, but may be taken as a valuable hint to some others engaged in manufacturing business.

It appears that some time ago various independent steel companies made large contracts for the sale of benzol, toluol and similar coal tar products, while the United States Steel Corporation stood idly by and booked no business. It was a matter of comment that the independent companies were loading themselves up with valuable contracts and that the principal steel company was remaining idle. It now develops that the course pursued by the United States Steel Corporation was the wise one.

The war consumption of explosives created an unprecedented demand for the coke by-products entering into their manufacture, and most of the steel companies rushed in to take these orders, running a year or more for the sale of their entire output at what then seemed to be good prices.

The Steel Corporation was apparently distanced in this race, and although it was erecting three benzol plants, with a capacity in excess of nine million gallons yearly, it made but one contract and that a comparatively small one. On this account there was considerable rejoicing among the smaller companies that they had outdistanced their big competitor and were running away with the business.

Now there is a different story to tell. When the corporation's plants were ready to start prices for these by-products had advanced something like 100 percent above those which prevailed when most of the contracts referred to were made. The Steel Corporation had not tied itself up with long-time contracts for the sale of its output and was able to take advantage of the enormously increased prices, so that it is now realizing much larger returns and profits on its sales than most, if not all, of its competitors.

We wonder if it does not too often happen that other manufacturers, in their eagnerness to get business and to get it ahead of someone else, permit themselves to be tied up in long-term contracts and thus deprive themselves of the opportunity to profit by any market advances which may come.

This is the season of the year when paper manufacturers are being asked to renew old cóntracts or to accept new ones. It is all well enough to have definite engagements for a sufficient proportion of one's product to guarantee more or less business activity, but we doubt the wisdom of tieing up the entire output of a paper manufacturing plant at any price that might now be obtainable.

Export Combinations

WHAT seems to be a very well authenticated announcement comes from Washington that the Federal Trade Commission will recommend the allowance of export combinations for American manufacturers.

The commission has for some time been investigating the subject, and it is generally believed has reached a conclusion that the cooperation of manufacturers in their efforts to establish export trade is not in violation of the antitrust law and should not be interfered with by the Government officials.

The Administration has not committed itself to any particular policy, but from such expressions as have been made at all, it is believed that a modification of the law permitting such export combinations will be welcome; and that if the advisability of such policy be recommended by the Federal Trade Commission, the President will likely make a similar suggestion to Congress in his next message.

A case of importance has been decided by the Federal Court in New Jersey, to which the United States Steel Corporation was a party. In that decision the court discussed the method by which the Steel Corporation had built up a great export trade in steel products which enabled it to sucessfully compete in foreign markets with the large European corporations. The court held that such methods were not forbidden by the antitrust laws of this country. If that be true, then other lines of industry would be at liberty to pattern their foreign commerce after the plan adopted by the Steel Corporation.

This decision of course is not final, but the Department of Justice has announced its intention to take it to the Supreme Court for review, and it is understood that the Administration will not be averse to a confirmation of the decision on this point, thereby establishing the law and fixing the principle, and it is generally believed that such will be the holding of the Supreme Court.

It is currently reported that Mr. Bryan has signified his intention of going to Europe for the purpose of negotiating peace among the warring nations. This he will do, of course, on his own responsibility and not in behalf of the American Government.

We do not have a great deal of faith in his being able to accomplish this end, but we nevertheless favor his going, for while abroad it will certainly be in the interest of peace in this country, though it may afford no assistance on the other side.

The Technical Section's Prize Essay Contest

THE editor of the "Notes off the Reel" department of the London *Paper Makers Monthly Journal* discusses the prize competitions for the solution of technical problems which have been instituted by the Technical Section of the American Paper and Pulp Association. He says:

"I notice that the Technical Section of the American Paper and Pulp Association is anxious to bring about advancements in methods in the manufacture of paper and pulp, and offers a prize of $100 for the best paper on each subject for the following:

" 'The various causes for the deterioration of the Fourdrinier wires and steps to be taken in the prolongation of the life of the wires.' "

"I remember a number of questions being put in an examination I entered for many years ago, and in my lucid, lengthy answer, among other brilliant reasons given, I stated that the life of the machine wire was influenced by the quantity of paper on it in a given time; also by frequent changes of sort. Then followed the action of bleach and antichlor and sulphuric acid used for cleaning purposes.

"I think I got sixteen marks out of thirty for my answer, and concluded that the examiner knew less than I did about the matter.

"I was backed up in this by an old machine man who said what either of us didn't know about the subject would fill a big book.

"At the time, I was very interested in reading the answers given by some other candidates who were machine men. They naturally went heavily into mechanical details but they all agreed with me about hyposulphite of soda being one of the worst enemies of a wire. In these later days does anybody use antichlor at all? The various causes for the deterioration of the wire would certainly require a lot of writing down, and I should think that the man who would win the $100 promised would be one who visited a score of mills and spent half an hour with each machineman on each machine in each mill. He would have a big compilation. A journalist who had no knowledge of papermaking would probably romp home—versed in this fashion.

"Another question is 'How can the pitch in sulphite pulp be eliminated?' Do the questioners mean the resinous matter? I know a lot about this but I would like to have the $100 before I give the wheeze away. A lot of mills in this country know of the trouble of wood resin. We used to have a patent process—an incidental one—for transposing this resin into what we called wood rubber, which would correspond to the pitch referred to.

"It was not a desirable part of the furnish and it behaved similarly to ordinary rag rubber in the papers.

" 'The effect of the order and time of adding alum, rosin and color on the retention of color.'

"This is another one. There is no general rule for this, or rather I should state that there are a lot of exceptions to the scientific theories.

"In our early days we were taught that it was the

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correct thing to put the rosin in first and then the alum for the more perfected precipitation of the resins. So it is, but sometimes the frothing was so much that the alum was often the first go into the beater. As far as the color goes, in a general way the anilines are all fixed with alum, and, with the exception of ultramarine, pigments, anilines, and chemical dyes all stand the last reaction of nearly all papers, basic acidity.

"I am not dismissing the question as being exhausted by these few remarks.

"From my own experience a lot of detail can be surplied dealing with the subject. But these things are fine points which only apply to special cases.

"The last question put is 'The retention of the various mineral fillers used in papermaking and their effect on the life of the machine clothing and the quality of the paper.'

"I suppose it is generally known that of the two principal loadings—kaolin and calcium sulphate—the former carries better. I fancy that calcium sulphate is more destructive to felts than clay, that is, other things being equal, furnish, speed, etc. The quality of the paper containing any particular kind of filler is a matter for lengthy investigation. If papers could be made equal in every other respect how would they compare at the end of a given time in strength, durability, color, etc., loaded respectively with china clay, pearl hardening, agalite, talc, magnesium carbonate and ordinary chalk, all the papers, of course, containing the same equal proportion of these minerals?

"One cannot answer for absolute quality without it being definitely stated what is meant by quality.

"The quality or property imparted to papers by the different minerals would be by comparison: china clay, softness; calcium sulphate, hardness; magnesium carbonate, porosity; barium sulphate, intensity.

"Has anyone yet answered the query, 'Why is it that barium sulphate loading or coating in a paper gives a black pencillike mark with a silver coin?' As is well known, buyers and users of art papers have long used the silver coin edge to determine for their own curiosity whether a paper was coated with barytes. Some time ago an enameller wanted to imitate another maker's paper. He utterly failed. Finally he sent me the paper and asked me to help him. In the note he told me that the rival paper contained barytes and that he had applied this mineral in different proportions and ways but without success. I found the paper contained no barytes, but another mineral which also gives a black mark with silver, and I soon knew that my friend had gone astray by concluding that it was impossible for barytes not to be in the paper seeing that the black mark was produced.

"So far I found two other minerals which if put in paper yield a similar mark to barytes. Of course, somebody will give me a chemical equation to fit the case.

"Looking over one of my problem books the other day I came across a paper that had been coated with casein and formaldehyde by hand. This coating represented the work of a war office official for about two years. He was a patient, tireless man, who knew nothing of papermaking or coating, and he actually went to two years' trouble (working without the aid of a papermaking expert who would probably have fixed him up with the information in a very short time) to try and find a waterproof paper for admiralty chart uses. At the end of the long period he paid me a visit and told me all about it. The hopes of a patent paper for him were very little and I don't think anything came of it.

"At the beginning of the war I was asked to find a chemical that could be put into Navy official books and papers so that when a gallant ship went down the chemical in the paper would combine with the salt in the water and become immediately obliterated, so that if a signal book fell into the hands of the enemy it would be a blank.

"I did what a good many old chemists would have done. Did something on a small scale to prove what an almost impossible thing it would be to do on a large scale. Being, however, an industrial chemist I ought to have passed it on to one of my consulting brethren to work at it and get a fee.

"I was looking through a patent list the other day and found that the patent for galalith was first obtained in 1906! Why was this well known product of formaldehyde and casein called galalith, and who had the cheek to ask for a patent for a combination that was probably known twenty years ago to every chemist and workman who prepared coating mixtures and coated paper. Truly the English industrial chemist is a fool."

The Development of Paper Box-Making

PAPER boxes in themselves are of little value to the community. They are not a commodity used by the average citizen or appealing to popular fancy, but are used as containers for other goods sold to the public. The exceptional growth of the industry is, therefore, only indicative of the industrial expansion of the nation. More goods were being produced in the United States which could be profitably sold in, or marketed in boxes. The custom also of marketing small commodities in paper containers was growing. Manufacturers were beginning to see the advantage of the original package idea, although as yet this movement was only in its incipiency. The industrial revolution of the nineteenth century was at its height at this time; automatic machinery was enjoying unprecedented development, and the consumptive power of the community was being expanded and developed. During this period several movements were born that contributed largely to the subsequent growth of paper box manufacturing. These were, the idea that food products were more sanitary when marketed in individual containers opened only by the consumer, and the growth of the trade-marked product idea.

The effect of these economic causes which conspired to stimulate box manufacturing is shown in the census of 1899. At this time there were in the United States seven hundred and twenty-nine box factories, employing 27,653 persons, who received annually in wages, $8,151,625, and who produced by their combined labor a paper box product valued at $27,316,317.

It was during the next ten years, however, that the paper-box industry enjoyed its greatest growth. During the period from 1900 to 1910, the number of factories increased to 949, employing 39,514 people and paying wages of $14,015,383 annually. The value of the product of these factories was estimated at $54,450,015, of which value $28,733,774 had been added by manufacture. In addition to this, boxes to the value of $6,098,306 were produced by other private establishments which did not engage in boxmaking as a chief industry.

The story of the paper box is the story of many other industries. Starting from humble beginnings and made in small quantities, the box has grown to be an indispensable commodity in modern commerce.—J. Philip Bird in *American Industries*, for September.

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THE WEEK'S LATEST TRADE NEWS

Business Revival on in the West

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 5— The business revival in the paper trade has reached Green Bay and the three mills here are operating under full time again after a slack period of several months.

There is business enough contracted for to keep the mills running up to the limit, or nearly up to the limit, for several months, according to the information obtained from the managers of the mills here. Some time was lost during the summer months, but business has improved so much in the last few weeks that there is little likelihood of a dropping off in trade for considerable time.

Paper manufacturers feel more optimistic now than they have for several months. They say the outlook in the trade is encouraging, more encouraging in fact than it has been at any time this year. The demand for all kinds of paper has commenced in a way that makes the manufacturers feel that better times are in store for them.

A New Pulp and Paper Incorporation

[SPECIAL TO PAPER]

WATERFORD, N. Y., Oct. 5—The Superior Paper and Pulp Manufacturing Company is the title of a newly incorporated company to do business in Cohoes, N. Y. The capital stock is $100,000 and the mill property of Gilbert & Bell has been taken over for operation, extensive plans for the enlargement and improvement of the mill being now under way. Its incorporators are H. I. Prankard, treasurer and secretary of the Frank Gilbert Paper Company, Waterford, N. Y.; Frederick W. Kavanaugh, of the Kavanaugh Knitting Company, and Arthur J. Burch, of John Leggett & Son, Troy, N. Y.

H. I. Prankard has been associated with the Frank Gilbert Paper Company, one of the oldest and most successful mills in the country, for the past twenty years and it is understood he will be president and manager of the new company, while retaining his office and interest in the Frank Gilbert Paper Company. Mr. Kavanaugh is connected with one of the largest knitting mills in the country and Mr. Burch has had a varied mill experience. With these men at its head, it would seem that this company cannot fail to be a prosperous one and a desirable addition to the trade.

Pa-Pro Company is Prospering

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 5—One of the prosperous companies in this part of the State dealing with paper and pulp products is the Pa-Pro Company, of Lowville, a concern which is one of a string established in connection with the mills of the late J. P. Lewis at Beaver Falls. Among other things made at the Lewis mills is Beaver board.

The Pa-Pro Company, which also manufactures sanitary milk bottle caps, has just received an order from the Bethlehem Steel Company, of Bethlehem, Pa., for 1,000,000 San Lac seals to be used on the ends of shrapnel shells. Besides this order the Pa-Pro Company has received a large order from the Manila Dairy Farms of Manila, Philippine Islands. The company not only does a large business in pulp board products in each State of the Union, but also has many customers in South America, Canada and England.

The following officers were elected for the ensuing year: H. D. Cornwall, president; H. S. Lewis and K. R. Tefft, vice-presidents; H. I. LeFevre, secretary, and H. L. Van Arnum, treasurer; H. S. Lewis, H. D. Cornwall, H. L. LeFevre, H. L. Von Arnam and Mrs. H. D. Cornwall, of Beaver Falls, and K. R. Tefft, of Lowville.

BLACK RIVER.

Mills to Reduce Working Hours

[SPECIAL TO PAPER]

SPRINGFIELD, Mass., Oct. 5—The Powers Paper Company announced the past week that their working schedule would be changed from a 54 to 48-hour week, the rate of wages being adjusted so that the employees will receive the same pay as at present. The Birnie Paper Company has also announced their adoption of the 48-hour week. This affects about 250 employees. The change in the Powers Paper Company affects from 325 to 350 employees.

Mr. Howes's Condition is Improving

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 5—Willis H. Howes, vice president of Knowlton Brothers, Inc., proprietors of the Kamargo Mills, of this city, is recovering from injuries sustained a few days ago in New York. It was at first thought that he had concussion of the brain, but examination showed that this was not the case.

Mrs. G. R. Goethals, of West Point, daughter of Mr. and Mrs. Howes, and wife of Captain Goethals, son of General Goethals, the engineer in charge of the construction of the Panama canal, was summoned and hastened to New York, but found that the condition of her father was not as bad as reported. Mr. and Mrs. Howes were registered at the Hotel Biltmore in New York.

BLACK RIVER

Riotous Strikers Before the Grand Jury

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 5—The preliminary examinations of the thirty-six strikers arrested on rioting charges, alleged to have occurred at the St. Regis plant at Deferiet on the night of September 2, were concluded before Judge J. A. McConnell in police court in this city last Tuesday. The result was that five men were discharged. Six had previously been discharged at the close of the prosecution's testimony. Seventeen waived examination and were held to await the action of the Grand Jury, and there are seven who are in doubt and whose cases will be argued later. The Grand Jury is now in session and considering the cases of these men.

The strike is still on and about twenty members of the militia are guarding the Deferiet plant, but there has been no demonstration of any kind for weeks.

One of the strikers a few nights ago fired a revolver in a Carthage saloon, smashing a cigar case. He was arrested and released on bail of $500. It was charged that he violated section 1906 of the penal laws of the State, but the man declares that he was not intoxicated, and that he did not flourish his revolver and shoot intentionally. On the other hand he proved that he had a permit to carry the weapon and insists that someone in the saloon questioned whether he had the revolver, whereupon he took it out of his pocket and, in putting it back, accidentally discharged it.

BLACK RIVER.

Kimberly-Clark Co. is Enlarging Its Plant

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 5—The Kimberly-Clark Company is making considerable additions to its buildings and power equipment at its mill at Niagara, Wis. Waterpower representing additional energy up to 2,000 hp. will be developed. This is being accomplished by taking out a small wheel and substituting a larger one with an umbrella type of generator attached. It is also intended to provide an additional finishing and storage room, an addition, 70 x 216 feet in size, being built to the present finishing room and warehouse.

"That's something I never knew," said a factory manager.

This man with a reputation as an "efficiency expert" was sure that he had stopped every power leak. But after reading our "Story of Some Friction Tests," he realized that he had overlooked the stuffing boxes of the engines.

And he was convinced, as you will be when you read this scientific treatise on rod packings, that sometimes as much as $500.00 worth of coal is wasted, annually, overcoming excessive and unnecessary friction on the rod that could have been prevented by the use of

DANIELS ROD PACKING P.P.P. FOR STEAM, AIR, WATER, AMMONIA

Reg. U. S. Patent Office

Remember, this is not the usual booklet making extravagant claims for the goods it advertises—**"The Story of Some Friction Tests"** is a most comprehensive and valuable study of the whole subject of rod packing. It is the combined results of the investigations and work of six or eight men—each a specialist in his particular mechanical line.

To the man who pays coal bills or the one responsible for efficient and economical operation of a steam plant, this booklet is invaluable.

The Story of Some Friction Tests

Forty-four pages, illustrated with many drawings, photographs, diagrams, charts, etc. A copy will be sent FREE on request. The supply is limited.

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Employed by
Address __________
Position __________

(PAPER)

QUAKER CITY RUBBER COMPANY

Manufacturers of Mechanical Rubber Goods

PHILADELPHIA 629 Market Street
CHICAGO 182 West Lake Street
PITTSBURGH 211 Wood Street
NEW YORK 207 Fulton Street

Farmers' Ass'n Favors Dredging Fox River

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 5—A report from Oshkosh says that the Wolf & Fox River Protective Association, which is made up of farmers owning property on the upper Fox and Wolf rivers, will make an effort to raise $100,000 by assessments upon their acreage, with which to accept a proposal of the Government engineer in charge of this waterway to dredge the lower Fox river a foot deeper at Menasha, in order to permit the water in Lake Winnebago to be held at a point a foot lower than now, and still the interests of navigation be not impaired. Members of the protective association say that if the lake were a foot lower than now they would suffer less from high water during times of flood, which has sometimes injured their crops or their lands during high water in the past.

It looks to a good many people as though the members of the association were much mistaken in their conclusions as to the results that would follow lowering the level of Lake Winnebagc a foot. High water on the upper rivers does not depend upon the level of the lake at all, in their opinion. Floods on the upper rivers come either from quickly melting snows or from torrential rains, and when these conditions are present the upper rivers overflow simply because the water they are called upon to carry is so much more than they will hold that a difference of one foot in the height of Lake Winnebago would cut no figure at all. The only thing that would relieve the upper rivers would be to so broaden and deepen them that they would carry away from ten to a hundred time more water than they do now, which is of course absurd.

Envelope Company Shortens Working Hours

[SPECIAL TO PAPER]

HOLYOKE, Mass., Oct. 5—During the past week the United States Envelope Company has announced that, beginning Monday, they will put into effect a 48-hour-a-week schedule in all their mills. The action was voluntary and in none of the cases will there be any reduction of wages, the rates on both time and piece work being increased to make up for the difference caused by the reduced hours. The employees will also continue to have their Saturday afternoons as formerly. The concessions embrace all plants and will affect about 2,500 employees. The divisions of the company are situated in Holyoke, Springfield, Worcester, Hartford, Ct., Rockville, Ct., Cincinnati, Ohio, and Waukegan, Ill. At the plants the working week has heretofore been fifty-four hours.

E. N. White, of the firm of White & Wyckoff, was appointed this week a member of the Holyoke Planning Board to fill out the unexpired term of Rev. Dr. J. S. Lyon, who resigned.

Frank R. Matthews, who has been employed at the Chemical Paper Company for the past eighteen years as superintendent has taken a position with the Taylor-Atkins Company, of Burnside, Ct. He was presented with a gold watch, chain and charm, a silver smoking set and a traveling bag by his fellow-workers in the mill Thursday.

Little Chute Plant May Be Abandoned

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 5—It is said that there is a likelihood the plant of the Little Chute Pulp Company, situated a couple of miles down the river from the Kimberly mill of the Kimberly-Clark Company, will not renew its lease for waterpower from the Green Bay & Mississippi Canal Company when the lease expires at the end of the present year, and that the plant may be dismantled and the company go out of existence.

The company was organized fifteen years ago or more by representatives of the Kimberly-Clark Company and the Patten Paper Company for the purpose of supplying the paper mills of those companies with groundwood pulp. Those mills since have been its principal customers, though it has sold to others also. Probably conditions have changed now with the owners to such an extent as to make it necessary for them to maintain this enterprise.

Evening Courses in Papermaking

[SPECIAL TO PAPER]

HOLYOKE, Mass., Oct. 5—Evening instruction in papermaking will be given during the winter months at the Holyoke Vocational School, Sargeant street, between Pine and Beech streets, by C. W. Rieser, an assistant in the department of chemistry of the American Writing Paper Company, under H. P. Carruth. The curriculum outlined is quite ambitious, as will be seen from the subjoined copy:

PROPOSED UNIT COURSES FOR PAPERMAKERS, 1915-16

Unit I—Chemistry for Papermakers:

1. Lime and soda ash.
2. Bleaching powder and alum or acid.
3. Rosin size and alum.
4. Rosin and soda ash.
5. Rosin size solution in water.
6. Rosin size milk for beaters.
7. Alum in filters.

Unit II—Treatment of Rags and Woodpulp:

- A. Rags.
  1. Threshing and dusting.
  2. Kinds or rags used for different kinds of paper.
  3. Lime.
  4. Lime and soda ash.
  5. Caustic soda.
     } Reasons and effects in bleach boiler.
  6. Rags.
     - (a) Washing.
     - (b) Bleaching.
     - (c) Draining.
- B. Woodpulp.
  1. Sulphite process.
  2. Soda process.
  3. Comparison of results of (1) and (2).
  4. Bleaching of woodpulp.
     - (a) In pulp mills.
     - (b) In paper mills.
  5. Other materials used in papermaking.
     - (a) Old papers.
     - (b) Straw.
     - (c) Jute.
     - (d) Grasses.

Unit III—Beating:

1. Types of beaters.
2. Construction and operation.
3. Mixing, cutting, hydration.
4. Fillers—properties.
   - (a) Kinds and uses.
5. Engine sizing (a) rosin, (b) starch.
6. Coloring (a) general, (b) mordants, (c) dyes, (d) pigments.
7. Refining engine (a) construction, (b) uses.

Unit IV—Machines:

1. Construction and principles.
2. Screening.
3. Sandtraps.
4. Wires (a) shake, (b) pitch.
5. Savealls—different constructions.
6. Press rolls.
7. Drying.
8. Sizing—glue starch.
9. Loft drying.
10. Machine drying, or air drying.
11. Condition of paper at various points on machine.

Unit V—Finishing:

1. Needs of different grades.
2. Effects on finish of (a) moisture, (b) various sizes, (c) various fillers.
3. Trimming.

Unit VI—Paper Testing

1. Strength.
2. Mullen.
3. Tensile strength.
4. Folding endurance.
5. Microscopical tests for fibers, spots, etc.
6. Tests for (a) ash, (b) starch, (c) free chlorine, (d) iron.
7. Testing raw materials, (a) alum, (b) bleaching powder, (c) fillers, (d) woodpulp.

"TEST SPECIAL"

Rubber Belting

BEST BELT

EVER MADE

NEW YORK BELTING & PACKING COMPANY

New York, N. Y. - - 91-93 Chambers Street
Chicago, Ill. - - 124-126 West Lake Street
Philadelphia, Pa. - - 821-823 Arch Street
Pittsburgh, Pa. - - - 420 First Avenue
St. Louis, Mo. - 218-220 Chestnut Street
San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

Plants Being Rebuilt and Improved

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 5—The rebuilding and improvement work that the Thilmany Pulp & Paper Company, of Kaukauna, has been doing all summer is now practically completed, and all the company's paper machines are running again. The nature of this work was described in this correspondence at the time it was undertaken. It has run into very considerable figures.

The Fox River Paper Company, of Appleton, is now in the midst of its extreme improvements and additions, which cover many parts of the plant, and will result eventually in giving the company another paper machine and in bringing every portion of the mill and equipment up to the highest standard of efficiency.

A new improvement and rebuilding enterprise of this character just announced is that of the Kaukauna Fibre Company, of Kaukauna. This concern has been in the hands of Frank F. Becker, of Kaukauna, as receiver for many months past. Mr. Becker has made up his mind that the thing to be done is to rebuild the plant practically from the ground up. The mill has been in existence for twenty or twenty-five years, and, as might be expected from this fact, has degenerated to a state of inefficiency. The receiver is making plans, which when carried out will result in the plant's being practically made new from top to bottom. Work will be begun without delay.

Work on New Bridge Held Up

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 5—The beginning of work upon the bridge across the Wisconsin river at Nekoosa is being held up by certain residents of the locality who assert that the provisions of the law covering it have not been complied with in all respects, and that they are entitled to have something to say in the premises. Just what the result of this interruption will be is not now known. The bridge will of course be built, but the construction may be delayed for a longer or shorter time.

NEWS FROM ALL OVER THE STATE

The final account of the executors of the estate of the late S. Elmer Smith, formerly an officer of the Menasha Paper Company, was allowed in the probate court last week, and the balance, amounting to about $10,000, was assigned to the mother, two brothers and two sisters of the deceased in equal shares.

Erling Riis, foreman at the sulphate mill of the Thilmany Pulp & Paper Company, Kaukauna, has accepted a position as superintendent of the sulphate mill of the Southern Sulphate & Board Company, of Louisiana.

John Hartmanstrofer, employed in the mill of the Outagamie Paper Company, at Kaukauna, suffered a broken arm and bad bruises on the face and elsewhere by a fall from a scaffold in the mill.

Victor Boncher, an employee of the Rhinelander Paper Company, is likely to lose the sight of both eyes, and Harry McIntyre was badly burned and disfigured by the blowing out of a piston head last week.

Mr. and Mrs. M. A. Wertheimer, of Kaukauna, leave this week for New York, where they will spend a couple of weeks.

W. L. Davis this week concludes the season at his summer home on Lake Winnebago, and leaves with his family for Eau Claire.

L. M. Alexander and William G. McNaughton, of Grand Rapids, returned last week from a business trip to New York.

Ex-Senator Crane and Wireless Telephony

[SPECIAL TO PAPER]

DALTON, Mass., Oct. 5—Former Senator W. Murray Crane, a member of the executive committee of the American Telephone and Telegraph Company, was among those present when President T. N. Vail of the company, sitting in his office, spoke into a telephone connected with the wireless tower at Arlington, Va., where his words were taken up by wireless and carried to Mare Island, San Francisco, Cal.

Promotion for L. M. Nelson

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 5—Lynn M. Nelson, who has been resident manager of the Union Bag and Paper Company, at Kaukauna for several years, has been promoted to the office of manager of the Chicago plant of that company, the plant being the largest owned by the corporation. A new mill has been built in Chicago by the Union Bag and Paper Company and it is nearly ready to operate.

Green Bay paper manufacturers dined Mr. Nelson while he was in the city yesterday afternoon and last night on a farewell call. Mr. Nelson has made good in the capacity of head of the Union Bag and Paper Company, at Kaukauna, and has many friends among the paper men in this part of the country. Among the local men who helped entertain him while here were John Welsh, manager of the Green Bay Paper and Fiber Company; John C. Fogarty, vice president and manager of the Northern Paper Mills; Frank H. Hoberg, president and manager of the John Hoberg company; Perry Wagner, secretary of the Northern Paper Mills; and John Hoberg, a director of the John Hoberg Company.

Dayton Paper Bottle Co. Suspends

[SPECIAL TO PAPER]

DAYTON, Ohio, Oct. 5—Considerable surprise was occasioned here when the announcement was made Thursday to the effect that the Dayton Paper Bottle Company, manufacturer of paper bottles, novelties and other paper products, located at Washington and Mound streets, this city, had been placed in the hands of a receiver by order of Common Pleas Court and upon the application of B. Byron Cundiff, stockholder and owner of fifty-six of the 750 shares of the company's stock, which was valued at $100 each. Inability of the concern to meet an indebtedness of $4,000 and other obligations given as the cause of the proceedings and the charge is made that it will be necessary to sell the property and assets to pay off the claims.

Attorney General Daniel W. Iddings was appointed receiver under bond in the sum of $5,000. In addition to being a stockholder, Cundiff alleges that he is surety on a $200 note for the company and that he also has a claim for back salary amounting to $243.86. The company, through its president, E. C. McFarland, filed an answer admitting the allegations of the petition and consenting to the appointment of the receiver.

The Dayton Paper Bottle Company was incorporated November 2, 1912, with a capitalization of $75,000. The patent was worked out by the promoters while the plant was located on East Third street, this city. When the business began to develop, however, removal was made to its present location, where a building was constructed purposely for the industry. The original company, which continued unchanged until the beginning of this year, consisted of the following officers: President, C. V. Crist; vice president, William Giesseman; secretary, Howell C. Long; treasurer and general manager, B. B. Cundiff. It is probable that the business may be reestablished and continued as General Manager Cundiff stated that the assets are more than twice the liabilities. He placed the assets at something in excess of $10,000, and the liabilities at $4,000. "We have orders for about 150,000 bottles," said General Manager Cundiff, "and the business outlook is especially encouraging."

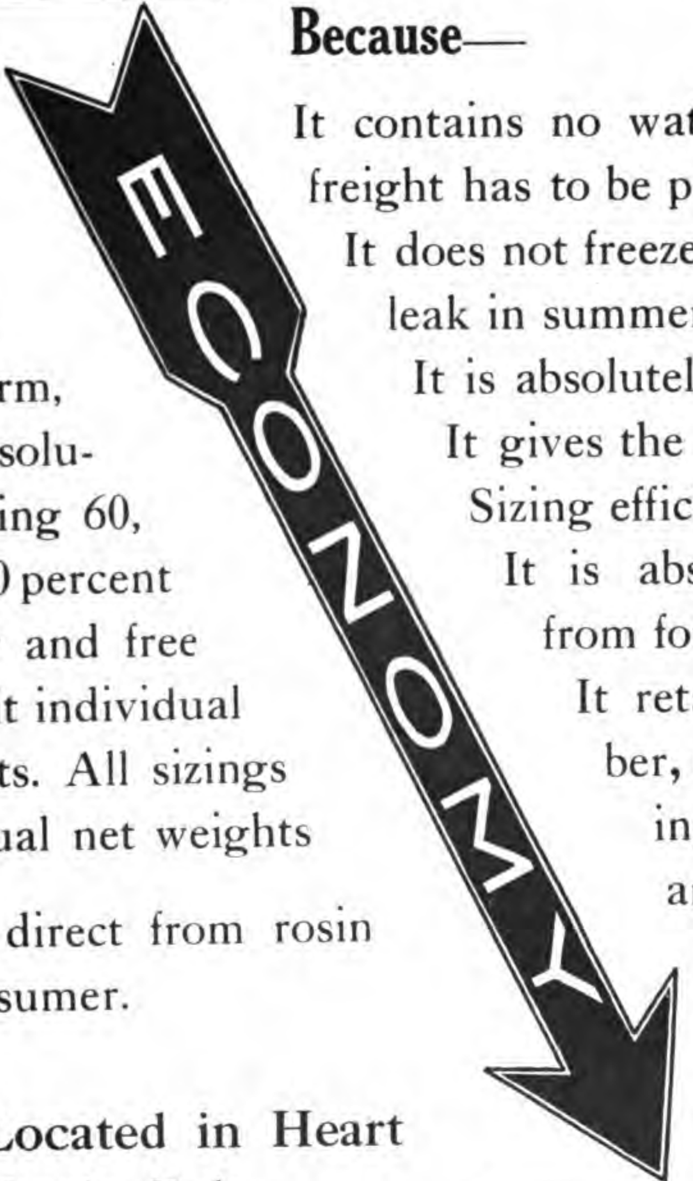
The present officers are as follows: President, E. E. McFarland; vice president, C. V. Crist; treasurer, C. D. Koeber; treasurer and general manager, B. B. Cundiff. Mr. Cundiff stated that while the factory has been temporarily shut down he expected to have it again in operation within the next ten days or two weeks.

GROWTH OF THE METHODIST BOOK CONCERN

Having grown from a business which was organized in 1820 with only four employees and a capital of $600, the Methodist Book Concern, of Cincinnati, with the laying of the cornerstone last Tuesday of its new building, celebrated a marvelous growth. There are now more than 400 employees and the volume of business each year reaches beyond a million and a half dollars. The total amount of money invested is approximately $2,300,000. The new home, when completed,

Why you should use DRY SIZE

IT IS ECONOMICAL



Because—

It contains no water on which freight has to be paid.

It does not freeze in winter or leak in summer.

It is absolutely uniform.

It gives the maximum of Sizing efficiency.

It is absolutely free from foreign matter.

It retains more fiber, thereby adding weight to and increasing the strength of the paper.

IT IS THE BEST SIZE IN THE WORLD

LIQUID SIZE

Absolutely clean, uniform, and easily soluble, containing 60, 65, 70 and 80 percent dry matter and free rosin, to suit individual requirements. All sizings sold on actual net weights

Shipments direct from rosin field to consumer.

Factory Located in Heart of Rosin Belt.

NATIONAL ROSIN OIL & SIZE CO.

SAVANNAH, GEORGIA.
New York N.Y.–
Chicago. Ill.–

will have about 125,000 square feet of floor space. Since Cincinnati has been made the publication place of about fifty Sunday school papers, that city has become the greatest center of religious publications in the world. Four of the Sunday School periodicals alone have a circulation of 2,199,000. The cornerstone laying was a notable occasion, the stone being the original one in the building erected for the concern on Home street in 1868. When the wreckers of that building tore it down, the stone fell unnoticed into the basement, where it lay until the debris was cleared away, when it was found with all of its contents intact.

TRAMPS ANNOY BOX BOARD COMPANY

The officials of the United Box Board and Paper Company at Urbana, Ohio, have been annoyed a great deal recently because of the fact that tramps have been making a habit of sleeping in the factory among the great bundles of paper, which are kept at the mill all the time. The intruders steal into the building during the early hours of the evening, conceal themselves in the paper and make a comfortable bed, if not disturbed.

NO CLUE TO PAYROLL THIEVES

No clues have been obtained relative to the identity of the thief who last week stole more than $4,000 of the payroll of the Richardson Paper Company at Lockland. The authorities have been working diligently and the company's officials have been using every means to effect the recovery of the money or the apprehension of the perpetrators, despite the fact that the company is fully insured and will lose none of the money. The sentiment continues to grow that the people who swept by the office in an automobile during the noon hour, when the clerks had left for luncheon, were responsible for the theft.

The Newton Falls Pulpwood Railroad

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 5—About three and a half miles of the railroad that is being constructed by the Newton Falls Paper Company in its Adirondack timberlands in the Middle River district have been completed and it is expected that within six weeks more the entire road will be finished and ready for operation. Nearly 300 laborers are being employed on the job, which is being rushed at the present time and fifty men are kept busy laying ties and rails.

The road will be about six miles in length and will run from Aldrich station on the Carthage & Adirondack branch of the St. Lawrence division of the New York Central into the heart of the tract, a distance of six miles, where 20,000 cords of spruce pulpwood is waiting to be hauled to the mill.

Up to the present time a name for the road has not been decided upon. It is probable that another company will be organized to control the road, but as yet no steps have been taken to this end.

BLACK RIVER.

Crown-Willamette's Electric Plant

The Crown-Willamette Paper Company, of Portland, Ore., will shortly increase the capacity of its electric generating station at Oregon City by the installation of a 1250 kilowatt water-wheel-type-driven alternating current generator. This machine will operate in parallel with two smaller machines at present installed. The present switchboard equipment will be replaced with a 6-panel board designed to handle both the old and the new generators, together with transformer and feeder equipment.

The new generator and the complete switchboard are being supplied by the Westinghouse Electric & Mfg. Company.

The Unity Paper Mills, Inc., having recently taken over the old property of the Potsdam Paper Company, of Potsdam, N. Y., are bringing this mill up to date through the installation of electric drive by Westinghouse motors.

The College of Forestry at Syracuse, N. Y.

[SPECIAL TO PAPER]

SYRACUSE, N. Y., Oct. 5—The State College of Forestry, Syracuse, finds forty-nine counties in the State represented in its student body at the close of registration of three of its classes. Ten States outside of New York are represented. With a senior class of fifty-one men who did not register in the college until the first of October there are represented in the student body fifty-five of the sixty-one counties in the State and twelve States other than New York. The total number of students in the college at the present time is 216 divided as follows: Freshmen 101; sophomores 68; Juniors 47. After the registration of seniors and postgraduates there will be 275 men in the college. Twelve States of the Union in addition to New York are represented as follows: Massachusetts, Vermont, New Hampshire, New Jersey, Connecticut, Pennsylvania, Ohio, Kansas, Virginia, the District of Columbia, Minnesota, and Wisconsin. Besides the 275 men in the professional courses in the College of Forestry, at Syracuse, there are eighteen men taking the one-year practical course in the State Ranger School, at Wanakena.

Because of the large number of New York boys registered the college has added several new men who are not only trained in their particular lines but men who have had wide practical experience. Prof. Howard B. Waha comes to the college after six years practical forestry work with the United States Forest Service in New Mexico and Arizona. Prof. Waha is a graduate in civil engineering from the Pennsylvania State College and will have charge of certain phases of forest engineering in the college. W. O. Ellis, who has just completed work for a doctor's degree at Cornell University, comes to the college as instructor in forest entomology. Mr. Ellis a graduate of Akron College and the Iowa State College and has had a great deal of experience in experimental work in entomology in the Middle West.

Nelson C. Brown, professor of forest utilization, has just returned from a 6,000-mile trip through the national forests of the Rockies and Cascades. He left Syracuse in June and went directly to New Mexico, where he studied methods of utilizing and protecting timber in the Southern Rockies. He then went up through California, visiting the redwood lumbering north and east of San Francisco to the Puget Sound country. There he visited some of the largest sawmills in the world and not only studied methods of utilization and manufacture, but looked carefully into the matter of methods used by the Western lumberman in supplying the Eastern markets. After studying conditions in Idaho and Montana, he visited the white pine section of northeastern Minnesota, where much of the best white pine is coming from today. Professor Brown brings back to the college a large amount of illustrative material which will be used in instructional work and in the forest museum of the college.

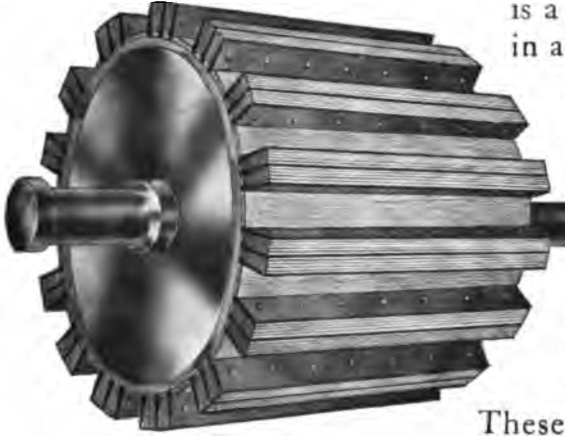
Trade Opportunities After the War

In a report to the Department of Commerce by Consul General Halstead, Vienna, Austria, which is published in *Daily Commerce Reports*, it is set forth that at the close of the present European war all nations now engaged in that struggle will need immediately and in large quantities articles wholly and partly manufactured, as well as raw materials. While this demand may tax the productive resources of all countries for a time, readiness to take advantage of new openings will count heavily in immediate sales as well as in future trade. It is, therefore, urgently suggested that American producers of raw materials and of manufactured and semimanufactured products should begin preparation for this trade.

That the fullest knowledge as to the needs of Austria may be before the manufactures of the United States, a report is in course of preparation by Consul General Halstead, which, it is hoped, will deal with every possible trade and contain as complete and as accurate information as is obtainable.

Try a Want "Ad" in PAPER the next time you need a competent superintendent, a machine tender, or a beater-man.

CLUSTER FILLING



is a type of Beater Roll filling which we install in any beater engine. It is put in as are ordinary Beater Bars. The same rings are used.

A mill using sulphate or sulphite stock cannot afford to do without **Cluster Filling.** Where mechanical wood pulp is employed, less sulphite is required to give the needed strength, since a **Cluster filled roll** furnishes a longer fibered stock than other rolls.

These rolls have attained great success in fiber mills, particularly in tissue and kraft mills, and they are in use in many mills from Maine to California. Some mills have installed as many as nine sets of **Cluster Filling.**

If you desire to make stronger paper this equipment will help you attain the desired end.

COVERED BY LETTERS PATENT

R. J. DOWD KNIFE WORKS

Manufacturers of **All Styles of Beater Roll Bars, Bed Plates, and Knives Used in Paper Mills**

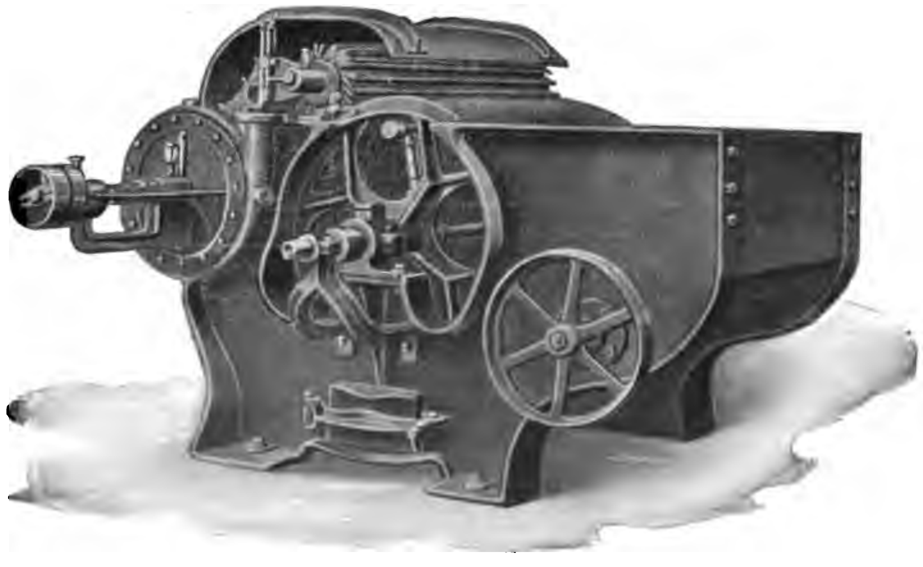
BELOIT, WISCONSIN, U. S. A.

As a Filter For Water

From the River

The WANDEL SAVE-ALL will remove sawdust, leaves and mechanical dirt, at less cost than any other system.

It is the ounce of prevention.



Wandel Screen Mfg. Co., East Walpole, Mass.

THE MARKETS

New York, October 5, 1915

MECHANICAL PULP

Owing to favorable water conditions, newsprint mills equipped with grinding machinery have been actively engaged in turning out mechanical pulp. According to reports ample stocks of groundwood are now in hand to meet requirements for a month ahead, and this will account for the small volume of sales by dealers. No improvement in business in the near future is looked for. Quotations ruled nominally steady at $15.75 to $16.50, f.o.b. plant.

DOMESTIC AND FOREIGN CHEMICAL PULP

There has been more of a disposition shown by paper mills to make purchases, but owing to the difficulty of placing orders in Scandinavian markets by local representatives, no contract sales of importance were effected. Prohibitive prices named by shippers abroad, owing partly to the cost of materials and high freights, together with an active demand from European markets, restricted business materially in the local market. Owing to these conditions, increased attention by paper mills is being centered on sources of supplies in this country to meet regular requirements. Offerings of dock supplies have been light which is also true of parcels to arrive, etc. Quotations closed strong but unchanged.

Sulphite, foreign—	
Bleached, ex-dock	**3.00 @ 3.10**
Unbleached, ex-dock	**1.95 @ 2.15**
Sulphite, domestic—	
Bleached, ex-dock	**2.70 @ 2.80**
Unbleached, ex-dock	**2.00 @ 2.15**
Soda, domestic—	
bleached delivered	**2.20@ 2.30**
Scandinavian Kraft	**1.90 @ 1.95**

BAGGING, ROPE, ETC.

A further improvement in the demand has led to fairly large sales of all kinds of bagging and rope, and given a strong impetus to the upward movement in values. Sales of domestic and imported manila rope included sizable lots on the spot and to arrive at prices ranging from 2½c and 2.75c and upward, as to quantity and quality. Moderate sales of flax waste are reported at 3¼c and upward, while fair lines of mixed rope were traded in at 1.05c to 1.10c. Arrivals of bagging were decidedly light and with no prospects of larger supplies coming forward in the near future, most dealers look for an advance in values.

Gunny, No. 1	**1.85 @ 1.90**
No. 1 Mill run	**1.45 @ 1.70**
Domestic	**1.60 @ 1.70**
Light Burlap	**1.60 @ 1.75**
Mixed Bagging	**1.00 @ 1.05**
Sound Bagging	**1.20 @ 1.30**
Wool Tares, light	**1.65 @ 1.75**
Wool Tares, heavy	**1.60 @ 1.70**
Foreign Manila rope	**2.60 @ 2.65**
Domestic Rope	**2.75 @ 2.85**
Mixed Rope	**1.05 @ 1.10**
Flax Waste	**3.45 @ 4.00**

IMPORTED RAGS

Notwithstanding the low level of prices and small spot stocks, there has been no perceptible improvement in the demand; some dealers report a better inquiry and larger sales, but others complain of slow trade. Prospects relative to the future supply of rags from foreign markets are not encouraging and indications point to a scarcity of stocks, which will probably be felt, within the next two months, followed by sharp rises in prices. Quotations closed steady and there has been less price shadings on round lots.

German Blue Cottons	**2.20 @ 2.25**
Dutch Blues	**2.20 @ 2.30**
French Light Blues	**2.20 @ 2.45**
New Light Prints	**3.70 @ 4.45**
New Mixed Prints	**2.95 @ 3.40**
German Linen Blues	**3.45 @ 4.15**
German Linen, Grav	**4.45 @ 5.28**
German S. P. F.'s	**3.45 @ 3.65**
German Light Prints	**1.95 @ 2.45**
Dark Colored Cottons	**1.10 @ 1.20**

DOMESTIC RAGS

Slow collections, meager spot stocks and a larger demand for rags of practically all varieties, culminated in a firmer market and an upward movement in prices toward the close of the week. In some quarters dealers have withdrawn offerings at current quotations as they look for a sharp appreciation of values in the near future, based on a scarcity of supplies, particularly of the medium and low qualities of rags. No price revisions have been made, and a firmer feeling was evident among dealers at the close of the market.

New Shirt Cuttings, No. 1	**5.20 @ 5.40**
New Shirt Cuttings, No. 2	**3.45 @ 3.65**
Fancy Shirt Cuttings	**3.30 @ 3.60**
New Blue Cottons	**2.70 @ 3.15**
New Dark Cotton	**1.45 @ 1.70**
New Unbld ctgs	**5.45 @ 6.00**
New Black Cottons	**1.70 @ 1.95**
No. 1 Whites	**2.70 @ 3.20**
Soiled Whites, street	**1.15 @ 1.25**
Soiled Whites, house	**1.75 @ 1.90**
Thirds and Blues	**1.30 @ 1.40**
Satinette Garments	**1.10 @ 1.20**
No. 3 Satinettes	**1.00 @ 1.05**
No. 4 Satinettes	**.85 @ .90**
No. 1 Tailor's Rags	**.70 @ .75**

TWINES

The market closed nominally steady in sympathy with quiet primary markets for the raw material. Orders for both twines and rope from home consumers covered mostly small lots for immediate delivery at current quotations. For export little has been done, which was due, not to an absence of a demand, but to difficulties in obtaining freight room, particularly for shipment to South American ports.

Sisal Hay	8½@ 9
Sisal Lath Yarn	8 @ 8½
Manila Rope	12½@13
Manila Rope, No. 2	11½@12
Jute Rope	6¾@7¼
Jute Wrapping Twines— 2 to 6 ply—	
No. 1	10½ @ 11
No. 2	8½@8¾
Jute Twines, 18	12¼@12¾
Jute Twines, 24	11¾@12¼
Jute Twines, 36	11¼@11¾
Jute Twines, 46&60	11¾@11¼
Jute Twines, 4½&6	6¾@ 7¼
Paper Maker's Twine	5½@6
B. C. Hemp, 18	17 @17¼
B. C. Hemp, 24	16½@16¾
B. C. Hemp, 36	16 @16½
Amer. Hemp, 4½&6	14½@15

OLD PAPERS

The firmer feeling of the market noted in our last issue has been increased by larger sales and mills in most instances are evincing an increased disposition to stock up at ruling quotations which are attractively low. Manilas, low grades, and the better selected qualities of papers, comprised the bulk of sales for the week just ended. In some quarters a slight increase in collections was noted. Prices closed firm for the entire list with an upward tendency to values.

No. 1 Hard White Shavings	**2.35 @ 2.40**
No. 2 Hard White Shavings	**1.95 @ 2.00**
No. 1 Soft White Shavings	**1.60 @ 1.70**
No. 1 Colored Shavings	**.75 @ .85**
No. 2 Colored Shavings	**.55 @ .60**
Magazine Flat Stock	**.80 @ .85**
No. 1 Crumpled	**.65 @ .70**
Solid Ledger Stock	**1.70 @ 1.80**
Ledger Stock	**1.30 @ 1.45**
White Blank News	**1.00 @ 1.05**
Extra Manila Cuttings	**.85 @ .95**
New Manila	**1.25 @ 1.35**
No. 1 Manila	**.60 @ . 70**
No. 2 Manila	**.30 @ .40**
Box Board Chips	**.25 @ .35**
Bogus and Mill Wrappers	**.40 @ .45**
Strictly Overissue News	**.45@ .50**
No. 1 Mixed	**.27 @ 25**
Folded News	**.30 @ .40**
Common Papers	**.20 @ .25**

Continued on page 36

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Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

CHEMICALS

Moderate offerings, due to a pronounced scarcity of supplies, led to a firmer feeling on the part of holders and to higher prices being asked for the leading varieties of papermaking chemicals. Bleaching powder is decidedly scarce and holders of spot lots have been refusing to shade 2½c; offerings of supplies for delivery over 1916 were made at 1½c, but slightly lower prices would have been accepted on firm bids for home consumption. Business in caustic soda has been practically confined to withdrawals on outstanding orders, which were fairly numerous; scarcity of offerings covering prompt shipments, and an active demand from the home trade, as well as exporters, resulted in a firmer market; dealers quoted 5 to 5⅜c for spot, while contracts covering deliveries over 1916 were held at 2½ to 2.65c a pound, basis 60 percent, and for export at 4c and upwards. Fair sales of sal soda at .60c and above for barrelled lots f. o. b. plant were booked; spot lots of concentrated found a steady outlet at 1⅜c and 1½c, as to size of order. Alum closed strong on a scarcity of supplies and a good demand; holders named 5 and 5⅝c for powdered, and 3¾ and 4⅛c for powdered and ground ammonia sorts, while sulphate of alumina sold at 1⅝ and 2c and at 1.35 and 1½c for high and low sorts respectively, as to quality and quantity ordered. Brimstone is finding a steady outlet at $22 to $22.50 a long ton, as to point of delivery. China clay attracted better attention and carlot sales were larger at $8 and upward, and $12 and over a ton, for domestic and imported, as to quality.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended October 2, 1915

WOODPULP

Scandinavian-American Trading Co., str. Carolina, Gothenburg, 555 bs. (111 tons) dry sulphite.

J. Andersen & Co., str. United States, Christiania, 5,610 bs. (1122 tons) dry sulphite.

Felix Salomon & Co., by same, 240 bs. (48 tons) dry sulphite.

Castle, Gottheil & Overton, by same, 800 bs. (160 tons) dry sulphite.

Bulkley, Dunton & Co., by same, 500 bs. (100 tons) dry sulphite.

E. Butterworth & Co., by same, 716 bs., (123 tons) dry sulphite.

Perkins, Goodwin & Co., str. Kaministiquia, Chicoutimi, 15,364 bs.

MISCELLANEOUS PAPER STOCK

Salomon Bros. & Co., str. United States, Copenhagen, 78 bs. jute bagging.

Continued on page 38

USE

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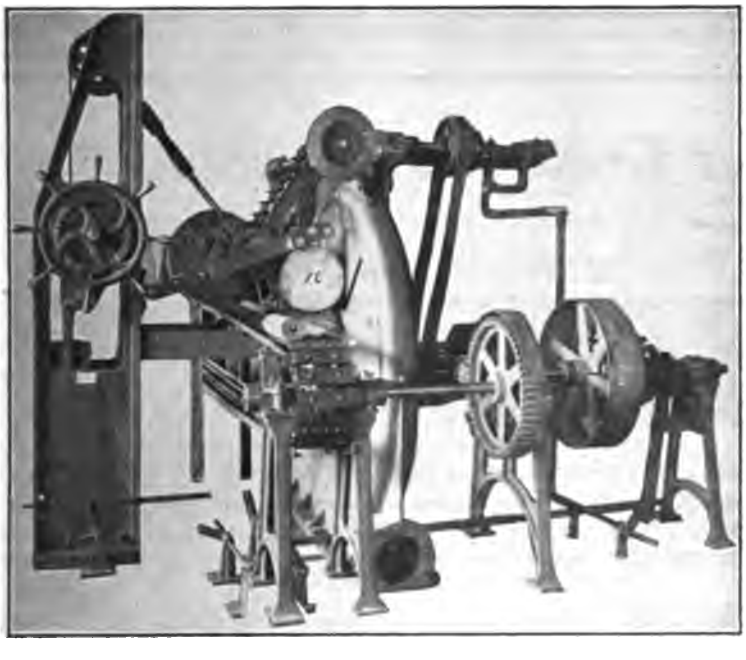

Facts to Consider:

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APPLETON, WIS., U. S. A.

Imports—Rags and Paper Stock

Continued from page 36

Castle, Gottheil & Overton, str. La Drome, 224 bs. rags.
Gatti, MacQuade & Co., str. Idaho, Hull, 93 bs. linen thread.
Salomon Bros. & Co., str. Cacique, Bordeaux, 349 bs. old rags.
W. O. Davey & Co., str. Exeter City, Swansea, 297 coils old rope.
Baring Bros. & Co., str. Baltic, Liverpool, 160 bs. paper stock.
Irving National Bank, str. Tuscania, Liverpool, 98 bs. paper stock.
Stratford Oakum Co., str. Mississippi, London, 35 coils, 179 bs. old rope.
Salomon Bros. & Co., str. Rotterdam, Rotterdam, 128 bs. old bagging.

OTHER PORT MANIFESTS

AT GALVESTON

Scandinavian-American Trading Co., str. Texas, Gothenburg, 500 bs. (100 tons) woodpulp.

AT BOSTON

Scandinavian-American Trading Co., str. Balto, Gothenburg, 995 bs. (150 tons) woodpulp.

AT PHILADELPHIA

Andrews & Co., str. Carolina, Christiania, 1,200 bs. (240 tons) woodpulp.
Brown Bros. & Co., by same, 400 bs. (80 tons) woodpulp.
Price & Pierce, str. Florida, Karskar, 500 bs. (100 tons) woodpulp.
Brown Bros. & Co., by same, 1,250 bs. (250 tons) woodpulp.
Bulkley, Dunton & Co., by same, Waija, 510 bs. (102 tons) woodpulp.
Baring Bros. & Co., by same, Utansjo, 180 bs. (36 tons) woodpulp.
Citizens National Bank, by same, 600 bs. (120 tons) woodpulp.
Brown Bros. & Co., by same, 300 bs. (60 tons) woodpulp.

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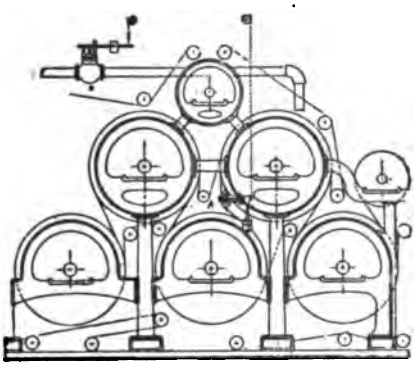

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Valley Iron Works Co., Appleton, Wis.

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Holyoke Machine Co., Holyoke, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.

BEATER BED PLATES

Bahr Bros. Mfg. Co., Marion, Ind.

BELTING

Boston Belting Co., Boston, Mass.
Ladew Co., Inc., Ed. R., Glen Cove, N. Y.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rosendale-Reddaway Belting & Hose Co., Newark, N. J.

BINDERS' BOARD

Fandango Mills, Millburn, N. J.

BLEACHING POWDER

Arnold, Hoffman & Co., Inc., New York.
Klipstein & Co., A., New York.
Penn. Salt Mfg. Co., Philadelphia, Pa.

BOARD MACHINES

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

BOOK PAPER

American Writing Paper Co., Holyoke, Mass.
Oxford Paper Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.

BRASS WIRE CLOTH

Appleton Wire Works, Appleton, Wis.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Parsons Trading Co., New York.

BRIMSTONE

Union Sulphur Co., New York.

CALENDER ROLLS

Perkins, B. F., & Son, Inc., Holyoke, Mass.
Farrell Foundry & Machine Co., Ansonia. Conn.

CALENDERS

Holyoke Machine Co., Holyoke, Mass.
Norwood Eng. Co., Florence, Mass.

CASEIN

Atterbury Bros., Inc., New York.
Kalbfleisch Co., Franklin H., New York.
Klipstein & Co., A., New York.

CASTINGS

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

CAUSTICIZING EQUIPMENT

Scott, Ernest, & Co., Fall River, Mass.

CHINA CLAY

Miner Edgar Co., Brooklyn, N. Y.
Morey & Company, Boston, Mass.

CIRCUIT BREAKERS

Westinghouse Elec. & Mfg. Co., E. Pittsburgh. Pa.

CLAYS

Miner Edgar Co., Brooklyn, N. Y.
Morey & Co., Boston, Mass.
So. Carolina Clay Co., West Chester, Pa.
St. Lawrence Talc Co., Natural Bridge, N. Y.

CLOSED FEED WATER HEATERS

Wheeler Mfg. Co., C. H., Philadelphia, Pa.

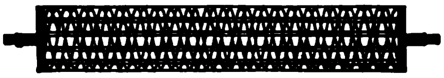
COATED PAPERS

West Virginia Pulp & Paper Co., New York.

CONDENSERS

General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.
Wheeler, C. H. Mfg. Co., Philadelphia, Pa.

DANDY ROLLS



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CONVEYERS
Buffalo Forge Co., Buffalo, N. Y.
Garland Co., Bay City, Mich.

CORDAGE
Columbian Rope Co., Auburn, N. Y.

COUPLINGS
(Flexible)
General Electric Co., Schenectady, N. Y.

CUTTERS
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co.. Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.

CYLINDER MOLDS
Black-Clawson Co., Hamilton, O.
Cheney Bigelow Wire Wks., Springfield, Mass.
Dilts Machine Works, Inc., Fulton, N. Y.
Eastwood Wire Mfg. Co., Belleville, N. J.
Improved Paper Machinery Co., Nashua, N. H.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

CYLINDER WIRES
Appleton Wire Works, Appleton, Wis.

DAMS AND RESERVOIRS
Field, William T., Watertown, N. Y

DANDY ROLLS
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cheney Bigelow Wire Wks., Springfield, Mass.

DECKLE WEBBING
Morey & Company, Boston, Mass.

DIAPHRABMS
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

DIGESTERS
International Process Co., New York.
Swenson Evaporator Co., Chicago, Ill.

DIGESTER LININGS
Preston's Digester Lining Co., Ltd., Radcliffe, England.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

DRAINER BOTTOMS
Snell, Samuel, Company, Holyoke, Mass.

DRYER FELTS
Fitchburg Duck Mills, Fitchburg, Mass.
Morey & Company, Boston, Mass.

DRYING MACHINES
Buffalo Forge Co., Buffalo, N. Y.

DUSTERS
Noble & Wood Machine Co., Hoosick Falls, N. Y.

DYESTUFFS
Farbwerke-Hoechst Co., New York.
Heller & Merz Co., New York.
Klipstein & Co., A., New York.

ELECTRIC DRIVES
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC GENERATORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC TRANSFORMERS
General Electric Co., Schenectady, N. Y.

ELEVATORS
(Portable)
Economy Eng. Co., Chicago, Ill.

ENCLOSED ARC LAMPS
General Electric Co., Schenectady, N. Y.

ENGINEERS
Barker, E. R., Boston, Mass.
Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Field, William T., Watertown, N. Y.
Little, Arthur D., Boston, Mass.
Scott & Co., Ernest, Fall River, Mass.
Smith, F. L., New York.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

ENGINES
Buffalo Forge Co., Buffalo, N. Y.
Westinghouse Machine Co., E. Pittsburgh, Pa.

EVAPORATORS
International Process Co., New York.
Scott & Co., Ernest, Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.

FANS
(Exhaust)
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

FASTENERS
(For Screen Plates)
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

FEED WATER PURIFIERS
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

FELTS AND JACKETS
Appleton Woolen Mills, Appleton, Wis.
Bulkley, Dunton & Co., New York.
Castle, Gottheil & Overton, New York.
Heimbach, Thomas Josef, Ltd., Düren, Rheinland, Germany.
Huyck & Sons, F. C., Albany, N. Y.
Lockport Felt Co., Lockport, N. Y.
Morey & Co., Boston, Mass.
Orr Felt & Blanket Co., Piqua, O.
Shuler & Benninghofen, Hamilton, O.
Waterbury Felt Co., Skaneateles Falls, N. Y.

FILTERS
Hungerford & Terry, Inc., Philadelphia, Pa.
Norwood Eng. Co., Florence, Mass.
Scaife & Sons Co., Wm. L., Pittsburgh, Pa.

FILTERING SYSTEMS
Improved Paper Machinery Co., Nashua, N. H.

FLAMING ARC LAMPS
General Electric Co., Schenectady, N. Y.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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Watertown, N. Y.

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Buyers' Guide and Information Bureau—Continued

FOURDRINIER WIRES
Appleton Wire Works Co., Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm., Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES
Swenson Evaporater Co., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

GENERATORS AND MOTORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS
Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holvoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP
Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE
Fox Paper Company, Lockland, O.

HOSE
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

HYDROELECTRIC PLANTS
Field, William T., Watertown, N. Y.

JORDAN ENGINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

JORDAN LININGS
Bahr Bros. Mfg. Co., Marion, Ind.

KNIFE GRINDERS
Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES
Dilts Machine Works, Inc., Fulton, N. Y.
L. & I. J. White Company, Buffalo, N. Y.

KRAFT PAPER
Berlin Mills Co., Portland, Me.
Fox Paper Co., Lockland, O.
Rantoul Co., C. W., New York.

KRAFT SODA PULP
Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

LININGS FOR SULPHITE DIGESTERS
Preston's Digester Lining Co., Ltd., Radcliffe, England.

LUMB GOVERNORS
International Process Co., New York.

LUMBER
Riordon Paper Co., Montreal, Quebec, Can.

MECHANICAL STOKERS
Westinghouse Machine Co., E. Pittsburgh, Pa.

METERS
(Flow, Air, Gas, Water)
General Electric Co., Schenectady, N. Y.

MILL CONSTRUCTION
Field, William T., Watertown, N. Y.

MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co. E. Pittsburgh, Pa.

PACKING
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

PAPER AND PAPER MACHINERY
Appleton Machine Co., Appleton, Wis.
Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glen Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Improved Paper Machinery Co., Nashua, N. H.
International Process Co., New York.
Jones & Sons Co., E. D., Pittsfield, Mass.
Lockport Machine Co., Lockport, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Eng. Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

PAPER DEALERS
Pulp & Paper Trading Co., New York.

PAPER EXPORTERS
Berlin Mills Co., Portland, Me.
Cliff Paper Co., Niagara Falls, N. Y.
Fox Paper Company, Lockland, O.
Parsons Trading Co., New York.

PAPERMAKERS' SUPPLIES
Atterbury Bros., Inc., New York.
Castle, Gottheil & Overton, New York.
Heller & Merz, New York.
Morey & Company, Boston, Mass.
Parsons Trading Co., New York.

PAPER MANUFACTURERS
American Writing Paper Co., Holyoke, Mass.
Berlin Mills Co., Portland, Me.
Brown, L. L., Paper Co., Adams, Mass.
Cliff Paper Co., Niagara Falls, N. Y.
Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
Riordon Paper Co., Montreal, Canada.
St. Regis Paper Co., Watertown, N. Y.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

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Buyers' Guide and Information Bureau—Continued

PAPER MILL CHEMISTS

Emerson Laboratory, Springfield, Mass.
Kleiner, Dr. E. G., and Knudsen, K. Hv., New York.
Little, Arthur D., Inc., Boston, Mass.
Williams, F. M., Watertown, N. Y.

PAPER MILL ENGINES

International Process Co., New York.
Westinghouse Machine Co., E. Pittsburgh, Pa.

PAPER STOCK

Aterbury Bros., Inc., New York.
Hofeller Co., Theodore, Buffalo, N. Y.
Mendelson Bros. Paper Stock Co., Chicago, Ill.
Parsons Trading Co., New York.
Salomon, Felix & Co., New York.
Wilkinson Bros. & Co., New York.

PAPER TESTER

Perkins, B. F., & Son, Holyoke, Mass.

PAPER THICKNESS GAUGES

Perkins, B. F., & Son, Holyoke, Mass.
Ticonderoga Machine Co., Ticonderoga, N. Y.

PASTING AND SATURATING MACHINERY

Atterbury Bros., Inc., New York.

PORTABLE ELEVATORS

Economy Eng. Co., Chicago, Ill.

POWER TRANSMISSION MACHINERY

General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan, Co., York, Pa.

PULP MILL SCREENS
(*Brass and Copper*)

Voith, J. M., New York.

PULP THICKENERS

Glens Falls Machine Works, Glens Falls, N. Y.

PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

PUMPS

Black-Clawson Co., Hamilton, O.
Buffalo Forge Co., Buffalo, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Glens Falls Machine Works, Glens Falls, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

RAG CUTTERS

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

Atterbury Bros., Inc., New York.
Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

RECORDING INSTRUMENTS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

REFINERS

Pusey & Jones Co., Wilmington, Del.
Voith, J. M., New York.

REINFORCED CONCRETE CONSTRUCTION

Field, William T., Watertown, N. Y.

ROLL BARS AND BEDPLATES

Dilts Machine Works, Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Farrell Foundry & Machine Co., Ansonia, Conn.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

ROLLERS

Boston Belting Co., Boston, Mass.

ROSIN SIZE

Arabol Mfg. Co., New York.
National Rosin, Oil & Size Co., New York.
Vera Chem. Co., N. Milwaukee, Wis.

ROTARY INCINERATING FURNACES

Scott, Ernest, & Co., Fall River, Mass.

RUBBER PRODUCTS

Fitchburg Duck Mills, Fitchburg, Mass.

SAVE-ALLS

Glens Falls Machine Works, Glens Falls, N. Y.

SCALES

Howe Scale Co., New York.

SCREENS

Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

SCREEN PLATES

Hardy & Sons, Wm. A. Fitchburg, Mass.
Union Screen Plate Co., Fitchburg, Mass.

SCREWS

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SHEATHING PAPER

Berlin Mills Company, Portland, Me.

SIZINGS

Arabol Mfg. Co., New York.
Atterbury Bros., Inc., New York.
National Rosin, Oil & Size Co., New York.

SLITTERS AND REWINDERS

Black-Clawson Co., Hamilton, O.
Cameron Machine Co., Brooklyn, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N. Y.

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Book,
and
Lithograph Papers

Buyers' Guide and Information Bureau—Continued

SODA PULP

Dexter & Bowles, Springfield, Mass.
Oxford Paper Co., New York.
Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

SPIRAL PIPE

American Spiral Pipe Works, New York.

STEAM REGULATORS

Pickles, W. F., Buckland, Conn.

SUCTION PLATES

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SULPHATE PULP

Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

SULPHITE FITTINGS

Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE MILL EQUIPMENT

Barker, E. R., Boston, Mass.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE PULP

Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
Berlin Mills Co., Portland, Me.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

SULPHUR

Union Sulphur Co., New York.

SULPHUR BURNERS

Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

SWITCHBOARDS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TIERING MACHINES

(In Piling Cases)

Economy Eng. Co., Chicago, Ill.

TRANSFORMERS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TRUCKS

Howe Scale Co., New York.

TURBINES

(Steam)

General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

TWINES

Columbian Rope Co., Auburn, N. Y.

UNBLEACHED SULPHITE FIBER

Riordon Pulp & Paper Co., Ltd., Montreal, Que., Canada.
St. Regis Paper Co., Watertown, N. Y.

ULTRAMARINE

Heller & Merz Co., New York.

VENTILATING FANS

Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WATER-COOLING TOWERS

Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS

Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS

Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS

Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

WELDING OUTFITS

(Arc)

General Electric Co., Schenectady, N. Y.

WET MACHINES

Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES

Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks, Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.

WOOD PRESERVATIVE

Carbolineum Wood Preserving Co., Milwaukee. Wis.

WOODPULP IMPORTERS

Andersen & Co., J., New York.
Atterbury, Bros., Inc., New York.
Castle, Gottheil & Overton, New York.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

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Rags, Paperstock, Etc.

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Advertisements for this page will be accepted at the rate of 10 cents a line, each insertion, cash to accompany order. A line averages seven words.

There is no quicker, cheaper or better way of filling your wants than through this Classified Section.

SITUATIONS WANTED

EMPLOYERS WANTING HELP should send a statement of their requirements to the Labor Bureau of PAPER, 117 East 24th street, New York City. Applications for work are constantly being received from men in all parts of the country.

Machine Tender

MACHINE TENDER, 40 years of age, experienced on book and coating papers, desires permanent position; Fourdrinier or Harper machine; references. Address—Harper, care of PAPER.

Chemists

CHEMIST, B. S.—Desires to obtain position as superintendent or general manager of paper mill making high grade rag paper. Eastern university graduate. Has had six years' practical experience in making paper, papeterie, boxes, etc., and an opportunity to study the art of papermaking. At present employed as superintendent in a well known paper manufacturing concern. Age 26 years and married. Correspondence with reliable, well rated concerns invited. Best of references will be furnished. Write B. S., care of PAPER.

CHEMIST AND PAPERMAKER—Young man, technical graduate, two years on microscopical, physical and chemical testing of pulps, papers and mill supplies; three years' experimental work on semi-commercial basis, on cooking, bleaching and beating of papermaking fibers, old and new. At present running experimental plant on semi-commercial basis. Would like position as chemist or assistant to superintendent. Address in confidence Chemist and Papermaker, care of PAPER.

Chemical Engineers

CHEMICAL ENGINEER—(B. S.) specialized in Maine's Paper Course, desires position in mill with chance for advancement. Address Specialized, care of PAPER.

CHEMIST AND CHEMICAL ENGINEER, a graduate from the Royal Institute of Technology, Sweden, is desirous of locating in a Western mill. Has had long and varied experience in the United States as chemist and engineer of tests, and is theoretically familiar with the manufacture of paper and pulp. At present employed. Can furnish excellent references. Address Graduate, care of PAPER.

Efficiency Engineer

EFFICIENCY ENGINEER AND CHEMIST desires position in up-to-date paper mill in a technical or executive capacity. Has had charge of testing laboratory and is thoroughly familiar with routine work and with tests on operating methods and conditions. An as engineer has had considerable experience in mill practice, cost accounting, etc., and, in addition, is thoroughly familiar with the actual manufacturing process itself. Further particulars and references will gladly be furnished interested parties on writing H. W. F., care of PAPER.

SITUATIONS VACANT

Back Tender

BACK-TENDER, experienced, is wanted in a mill in a small village in the East. Cylinder machine on roofing felts only. House for man with family; also boarding house. Must be strictly sober and reliable. Excellent opportunity for the right man. Write L. M., care of PAPER.

SITUATIONS VACANT

PAPERMAKERS OUT OF WORK, machine-tenders, beatermen and millwrights out of a position, are invited to send their qualifications, requirements as to salary, etc., to the Labor Bureau of PAPER, 117 East 24th street, New York City. Openings now exist for several workers.

Superintendent

SUPERINTENDENT, experienced chiefly in the cooking of hard woods and the handling of them in paper, is desired by a paper mill in New York State. Should be a technical man familiar with the utilization of hard woods in pulp, and who is able to produce novelties in paper from sulphite and groundwood, or a mixture of these in connection with waste papers. Write stating experience and qualifications to Hard Woods, care of PAPER.

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FOR SALE—Three Matthews Patent Compensating Winders—Four shaft—for 128" machine. Big bargains. Write Champion Fibre Company, Canton, N. C.

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The best way to obtain good employment and the best and most efficient employees in the paper manufacturing industry is through the careful use of the Want-Ad columns of PAPER.

If you are seeking employment or an employee; if you are in need of second-hand machinery, or have some to dispose of; or if you have anything of interest to offer to the trade—you may realize your desire by placing a small Want Ad in PAPER.

PAPER covers the paper manufacturing industry thoroughly and its contents are carefully read and digested by the most prominent men in both the executive and mechanical ends of the business. Catch their eye and you get their attention.

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PAPER

A WEEKLY TECHNICAL JOURNAL FOR PAPER AND PULP MILLS

Published by PAPER, Inc.
117 East 24th Street, New York

OCTOBER 13, 1915

Vol. XVII
No 5

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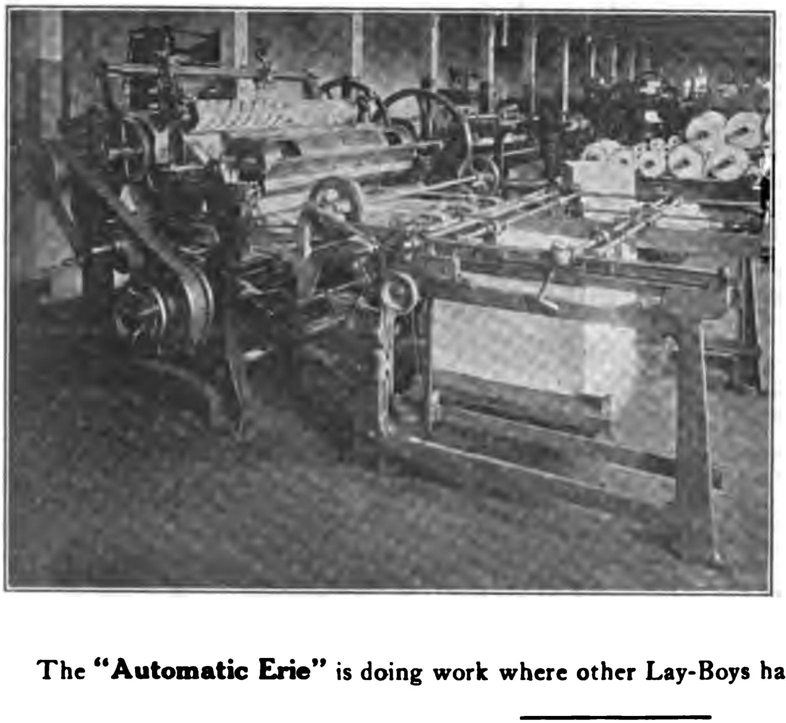

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A G-E motor, designed to stand the strain of rapid reversing, is coupled directly to plater shaft through rigid coupling. It is controlled by switch at operator's side.

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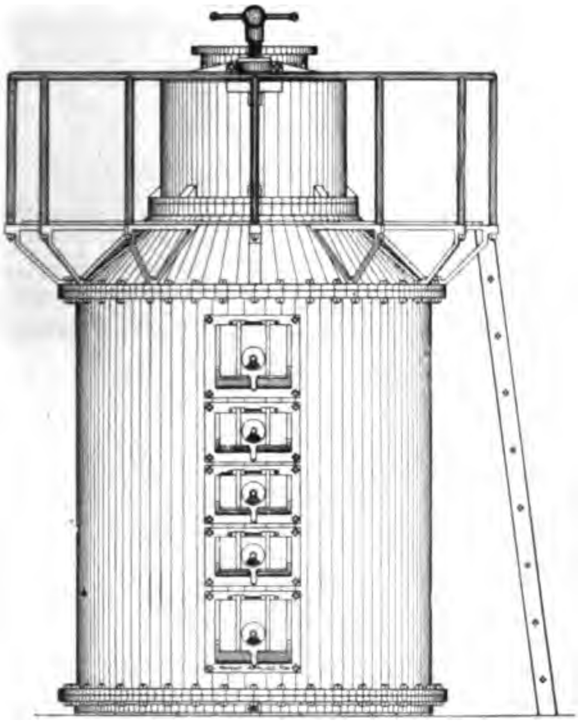

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Perfect Combustion
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The Mullen Tester

is now used by the great majority of paper manufacturers and dealers and by leading paper buyers.

Write for further particulars about the new compensating lever clamp.

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Patented July 13, 1915

The Standard for measuring the Bulk of Paper, recording accurately the Bulk of any Book, number of Sheets, or Dummy up to four inches in thickness, under pressure of from one to fifty pounds per square inch on surface of paper.

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Manufacturers of Improved Warren Patent Double Drum Winders, Improved Calender Doctors, and other Paper Mill Specialties.

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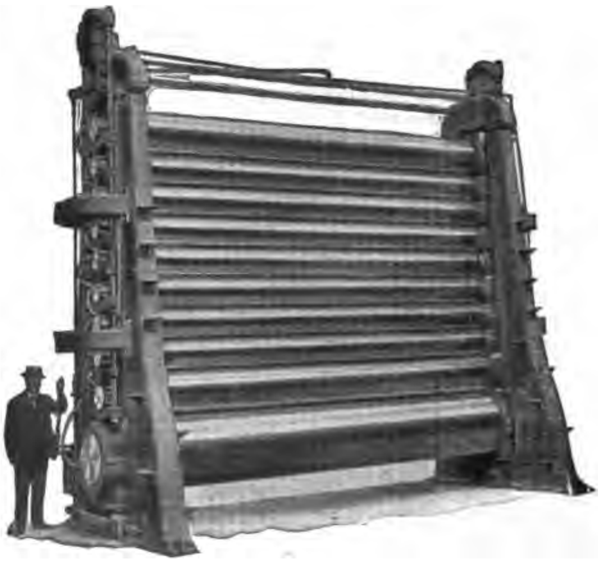

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For simplicity and capacity no other compares with it.

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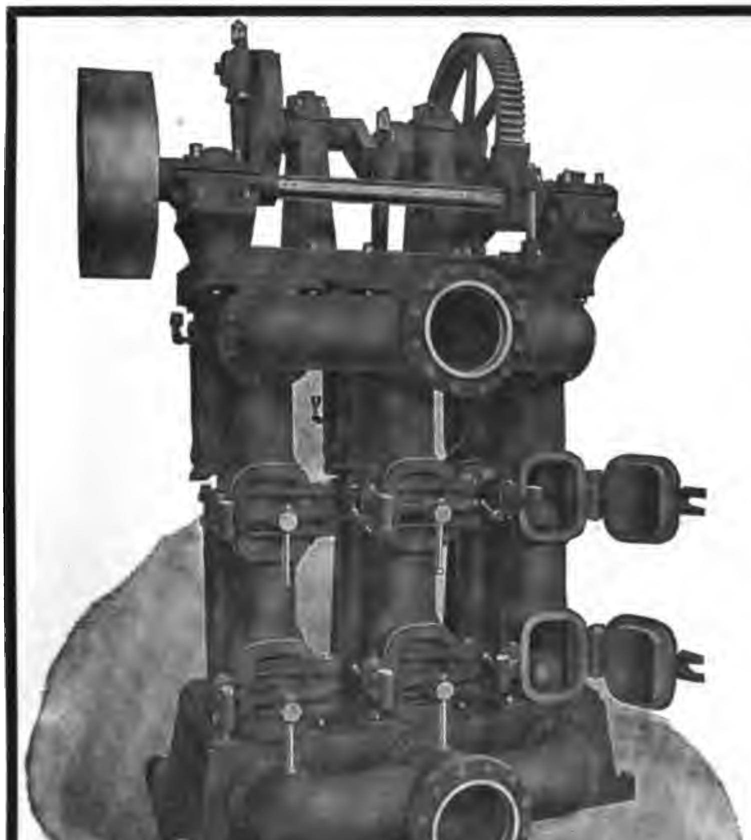

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Hamilton, Ohio, U. S. A.

Our Paper Machines are built right to please and satisfy a customer. They produce results and are economical.

Heavy duty **Stuff** pumps to meet every requirement and suitable for the severest service.

All parts machined accurately and interchangeable.

Single, Duplex and Triplex Pumps.

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A Thoroughly Practical

Automatic Paper Carrier

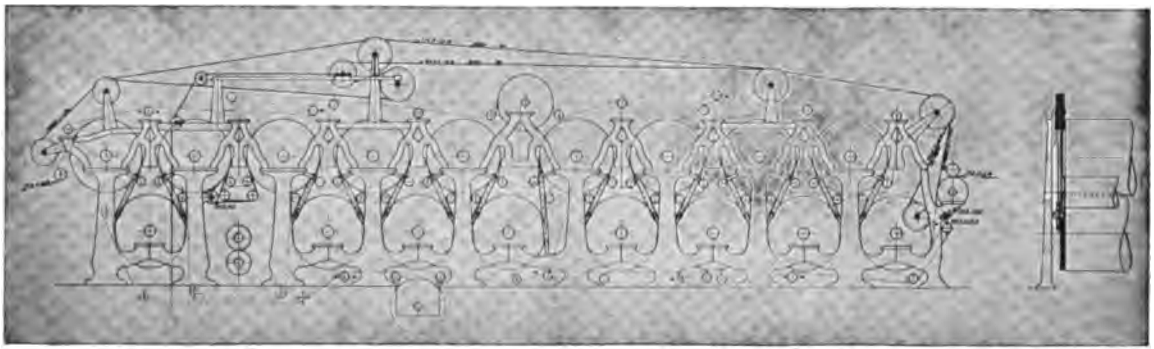
SHEAHAN'S U. S. PATENT 1104759
ALSO CANADIAN AND EUROPEAN PATENTS

Takes the Paper Automatically Through Dryers

Prevents Accidents—Saves Broke Paper
The Backtender's Friend—It Never Misses an End

NO SLACK PAPER ON DRYERS

Passes the Paper at Exact Speed of Dryers



AS APPLIED TO PAUL A. SORG MACHINE AT MIDDLETOWN, OHIO.

Write them for their opinion

THE SHEAHAN PAPER CARRIER TAKES THE PAPER FROM THE PRESS TO THE CALENDER END OF DRYERS AUTOMATICALLY.

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NO MISSED ENDS. NO SPEARING DUE TO MISSED ENDS. NO SHUT DOWNS DUE TO SPEARING. ALL THESE INCREASE PRODUCTION.

NO SLACK.

PAPER IS LED THROUGH DRYERS AT SAME TENSION AND WITH SAME DRAW AS WHEN THE SHEET IS RUNNING PROPERLY ON THE DRYERS AND THERE IS NO TIME LOST AND BROKE MADE WAITING *FOR SLACK TO TAKE UP.*

SOME SLACK PAPER BROKE FACTS.

SLACK PAPER IS WET. THEN BROKE IS MADE AT END OF DRYERS. IF EXTRA STEAM IS TURNED ON TO DRY THE WET SLACK THEN PAPER BECOMES TOO DRY AND BRITTLE AND BROKE IS MADE AT CALENDERS.

THERE IS. NO SLACK WITH THE SHEAHAN.

SAFETY FIRST.

Write for Bulletin D. 11.

THE BAGLEY AND SEWALL CO.

WATERTOWN, NEW YORK

PAPER
· EVERYTHING · REGARDING · THE · MANUFACTURE ·
· · · SALE · AND · USE · OF · PULP · AND · PAPER · · ·

Vol. XVII OCTOBER 13, 1915 No. 5

The Choice of Paper for Halftone Engravings[1]

A Study of the Relation of Ink and Paper in Halftone Printing

By H. P. CARRUTH

Chief Chemist, American Writing Paper Company, Holyoke, Mass.

THE study of halftone printing is one of the most fascinating that can be conceived of. Through its use pictorial representation with photographic exactness as to truth and detail has become a commonplace of everyday life, so much so, in fact, that the process itself has become accepted, like the telephone and others of the wonderful inventions of recent years. It would be out of place to attempt a history of the process or to say more than a word as to its effect on our everyday life. I ask you only to consider the appearance of your magazines, your catalogues and your newspapers, were the halftone left out of their pages.

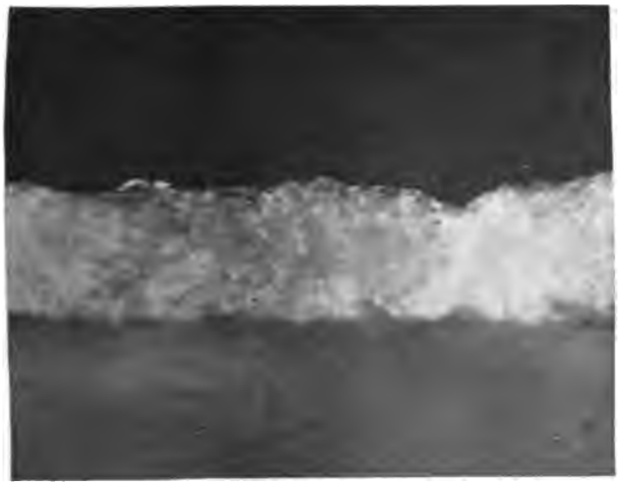

FIG. 1

In spite of the importance of the halftone process and the great improvements that have been made in it, it seems that this progress has been made largely by rule-of-thumb methods, and especially is this true of the basic material required—paper.

There are four factors in the production of a halftone print which dominate all others in importance. These are: First, the plate; second, the press; third, the paper, and fourth, the ink.

The manufacture of a halftone plate is a study in itself requiring much knowledge of photographic chemistry and optics. It will suffice here to say that the completed plate is a plane copper plate into the surface of which is etched an image obtained by photographic means. This image is made up of points or holes of varying size depending upon the amount of light shown in the photographic negative, the shadows being etched less than the high lights and with all degrees of gradation between.

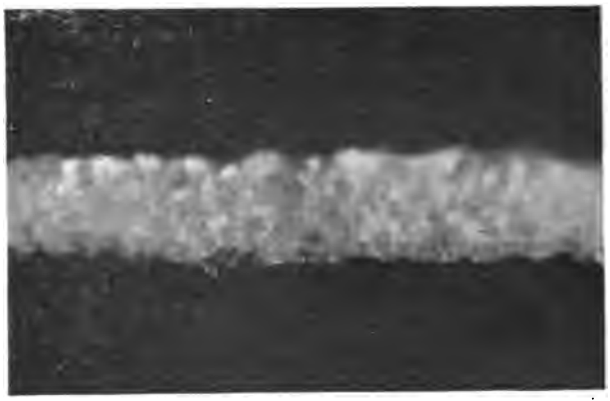

FIG. 2

This plate is covered with a thin layer of ink so placed upon it that only the unetched portions are covered, and the ink then transferred to its final resting place on the paper.

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[1] Read before the Technical Section of The American Paper and Pulp Association at the meeting in Grand Central Palace, New York, September 23, 1915.

The various types of press are not here of interest so long as they do the required work. They do, however, introduce many problems because of differences in speed and other factors. Coming now to the paper stock destined to carry the printed image to the eyes of the reader we arrive at the factor in halftone production which most vitally concerns us as papermakers.

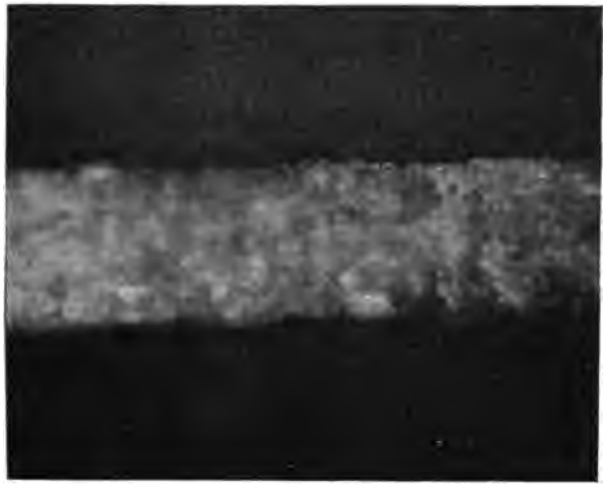


FIG. 3

Two classes of paper are principally used where the halftone is of first importance. They are the coated and supercalendered stocks, both classes further subdivided into many types.

Coated paper traces its origin to the demand of the halftone printer and is today preeminent for the purpose. Supercalendered paper must be admitted a substitute having, however, many advantages over the coated stock.

It is obvious that the ideal medium to secure the image of the plate should be such as to reproduce exactly the conditions on the plate. Every dot should be uniformly colored and of exactly the same size and shape as the corresponding point on the plate. We shall see that this ideal is never achieved in practice, but that e degree in which this ideal is achieved determines e value of the paper for the purpose.

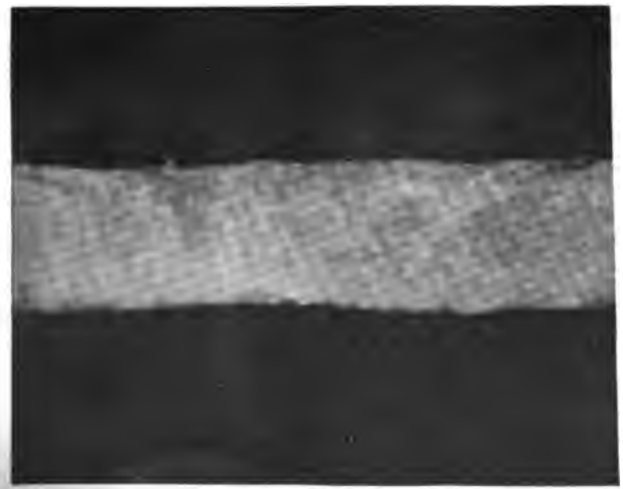


FIG. 4

No consideration of the paper for halftone printing n properly be given without an equal consideration of the ink to be used. This important and vital fact seems to have been largely overlooked both by papermakers and ink manufacturers.

Printing ink is made from mixtures of various oils, pigments, and dyes. These mixtures do not all work alike, nor does any one of them work the same on different papers.

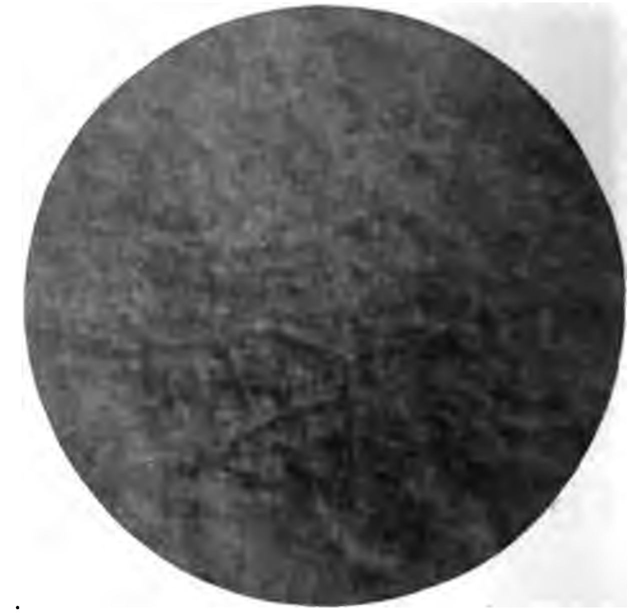


FIG. 5

Returning to a consideration of paper, we must first realize that there are two different ways in which a sheet must be judged for halftone printing. Of these the one which has received the most attention is the surface. In an uncoated paper this surface is made up of hills and hollows which represent the interlacing of the fibers. Calendering merely crushes these hills until they are brought more or less into the plane of the hollows. This crushing, however, has a very marked effect on the action of the ink, as will be shown.

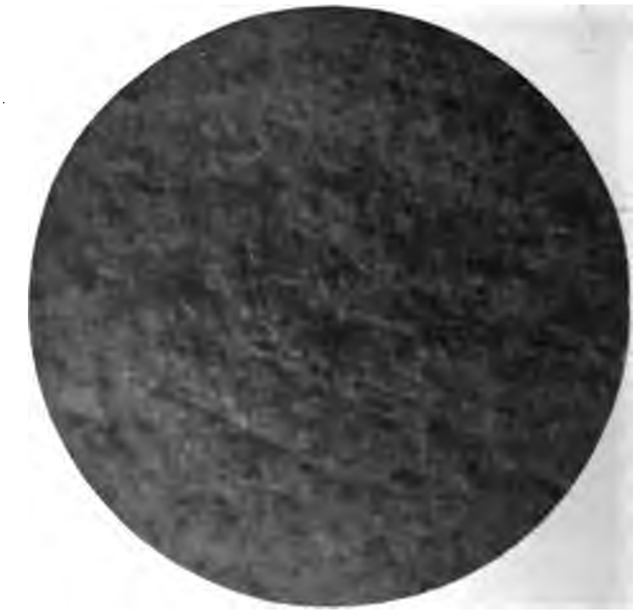


FIG. 6

A coated paper, on the other hand, achieves the desired result, a plane surface, by the opposite means, that is to say, the hollows are filled up with a finely divided mineral substance held in place by an adhesive.

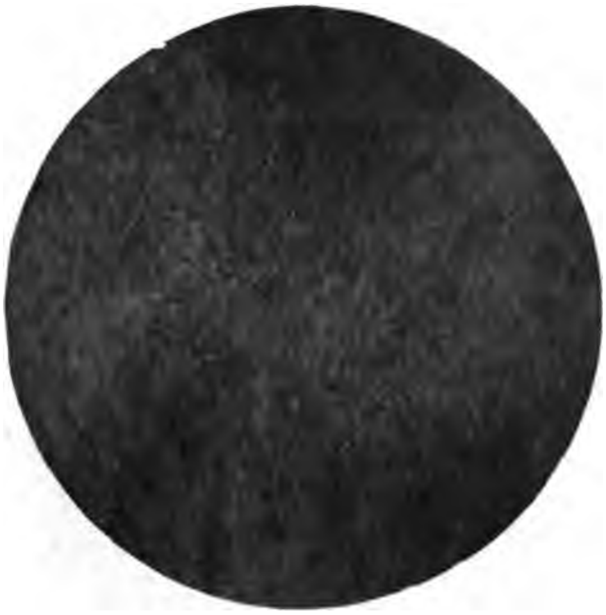


FIG. 7

FIG. 8

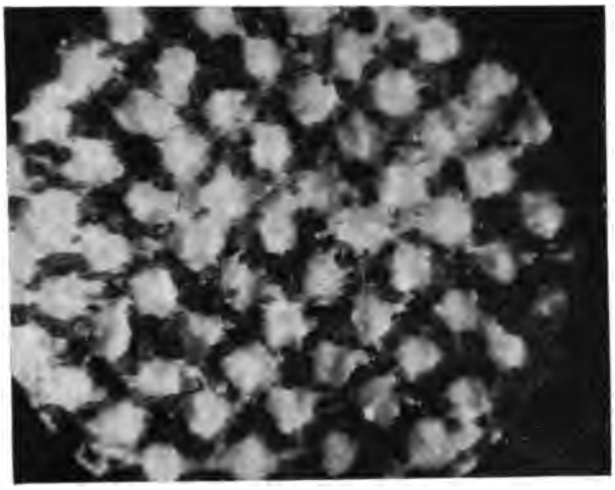


FIG. 9

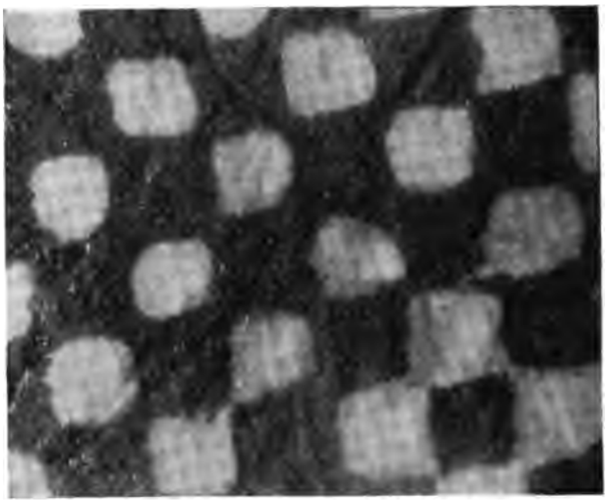


FIG. 10

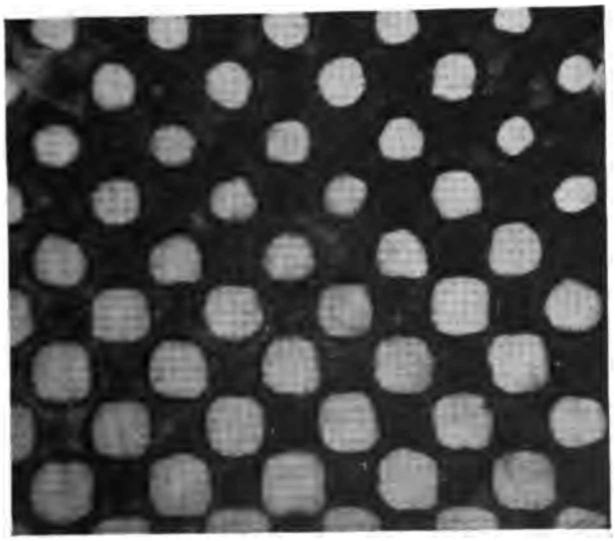


FIG. 11

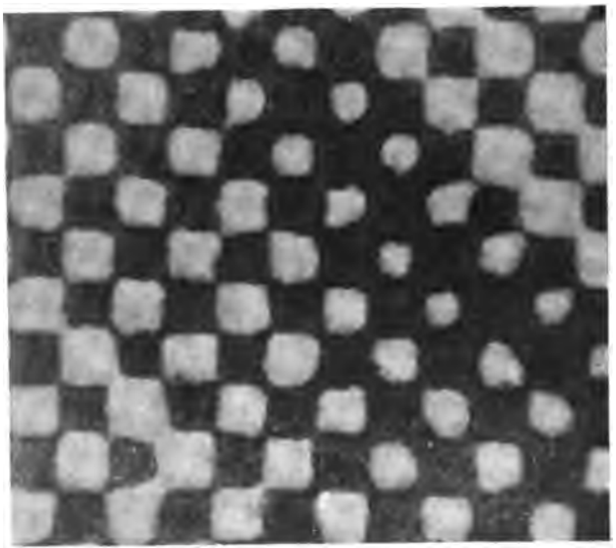


FIG. 12

The coating, however, does not stop there, but a sufficient covering is put on to cover the hills as well, so that the finished sheet presents an effect much like that after a heavy snowfall has drifted and filled all small depressions in the ground and brought the whole to a uniform level with a covering of unequal thickness.

To make clear these differences in surface and the fact that both coated and supercalendered are approximately of equal smoothness, I have prepared cross-sections of three finishes in uncoated and one-coated paper.

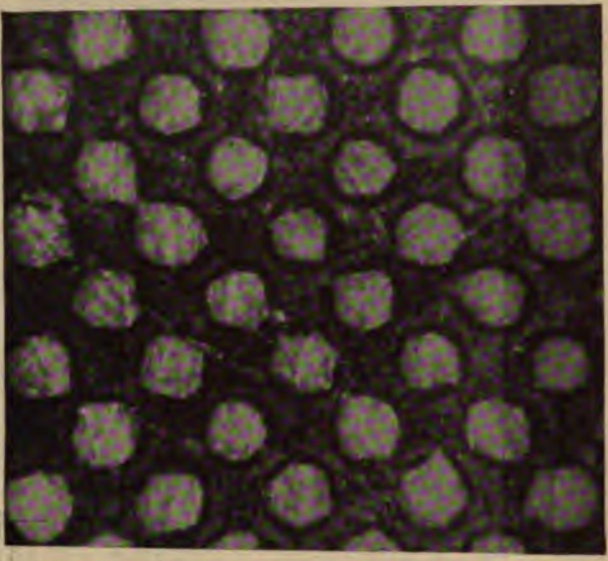


FIG. 13

The first picture is a photomicrograph of a cross-section of an antique finished paper.

The second is a cross-section of a machine finish of ordinary smoothness.

The third is a cross-section of a highly supercalendered paper used for halftone reproduction.

The fourth is a cross-section of a coated paper.

The fifth is the surface of an antique finished paper.

The sixth is the surface of a machine finished paper.

The seventh is the surface of a supercalendered paper.

The eighth, of a coated paper.

You will observe that in cross-sections there is comparatively little to choose between the coated and the supercalendered, but that the surface displays a quite noticeable difference. In the coated paper it is practically smooth except for a few minute depressions, probably due to small particles of grit which have fallen from, or been brushed out of, the coating.

On the other hand, the supercalendered surface shows the fibers lying meshed together.

If it is attempted to print from a halftone plate on an antique surfaced paper or in less degree on an ordinary M. F., the points of the plate only come in contact with the higher parts of the surface. The result is a breaking up of the image, certain portions not being printed. This gives a mottled uneven effect, and is most noticeable in the finer screen plates. The effect is well shown by the micrograph. (Fig. 9) Well made coated and supercalendered papers do not exhibit this defect.

Another defect of surface which is practically universal is the long undulations caused by unequal thickness of the sheets and due to the formation on the paper machine wire. These are noticeable when a sheet is calipered at several spots, a 10 percent difference in thickness being by no means uncommon. This defect is quite easily compensated for by the paper backin used for impression.

We come now to that factor in the paper which h as yet received scant attention by papermakers, b which, we feel sure, will eventually be considered equal importance with the surface. The affinity, if may so express it, of the paper for the particular i used.

We have seen that our ideal print is a true and pe fect reproduction of the inked surface of the halfto plate, and that in order to achieve this result the pap must present a practically plane surface to the plat This, however, is not sufficient. If the surface is n able to absorb the ink in that fraction of a second b tween the moment when it comes in contact with t outer surface of the ink on the plate and the mome when the impression begins its squeezing action find a most interesting condition. The ink is forc away from the surface of the dot and accumulat around its edge and below the top level, from which is torn when the paper leaves the plate. The result that instead of a black dot of exactly the size of t dot on the plate, we find a grayish dot surrounded a jet black ring the whole of considerably larg diameter than the dot.

The degree in which this trouble occurs vari greatly with different papers and different inks. general, however, it may be said of an uncoated pap that it increases proportionately with the degree calendering. Other factors are no doubt of conside able importance such as the degree of hydration of t fiber, the kind and amount of sizing, the formation the sheet, and the kind of stock used.

The variations in coated paper are probably due variations in the coating mixture, such as differenc in adhesives and mineral constituents.

In both classes of paper absorption by capillarity no doubt assisted by adsorption of the oils and dyes the ink by the cellulose or colloidal minerals wi which they come in contact. This opens a fascinati field for speculation or experiment.

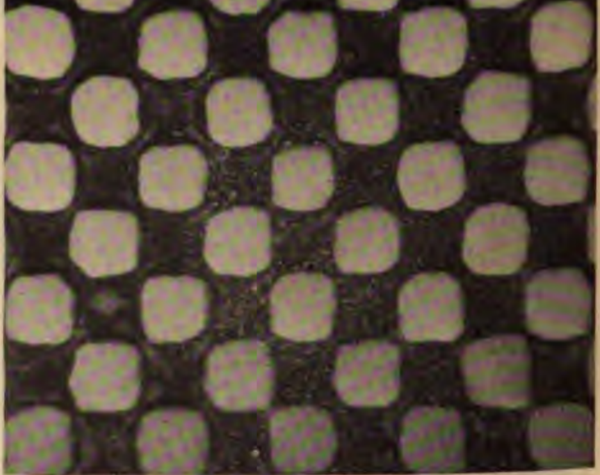


FIG. 14

In general it is noticeable that coated papers give much more accurate reproduction of the dot than s per papers, that the outlines are more clearly define and the black "halo" is less pronounced.

It is, however, interesting to note that of many sa ples examined under the microscope only one was e tirely free from all traces of halo, and that this exce

The most important test to which oil must be submitted is that for acidity. This can be undertaken by adding to a sample of the oil, in a small glass vessel, some cuprous oxide. After about twenty to thirty minutes, oil containing acid will acquire a light green to bluish-green color, whereas acid-free oil will undergo no change. In place of cuprous oxide, the ordinary copper-ash from the coppersmiths, may be used.

Cylinder oils, especially those for the lubrication of gas motor cylinders, can be effectively tested for possible acidity by placing a few drops of the oil to be tested on a brightly polished brass or copper plate. If after five or six days a light green discoloration of the oil takes place, or if a light green deposit is formed, the oil contains acids which would speedily attack the cylinders and pistons. Good oil, on the other hand, retains its color.

The lubricating efficiency of an oil for gearing or machine bearings is easiest determined by comparing it with the aid of an oil-testing machine, with the known lubricating efficiency of another oil. There are different kinds of oil-testing machines, mostly based on one and the same principle and which we can, if needed, readily make for ourselves. Two lubricated surfaces, for instance, are caused to rub against one another, of which one revolves while the other is pressed against the rotating surface. When the pressure, that is to say the bearing pressure, is removed, the arm, with the lubricated surface attached to it, will swing free around the revolving lubricated surface, and form a pendulum. The tendency of the bearing surface under pressure to turn with the rotating surface, is, however, partly counteracted by the weight of the arm and the pendulum is only carried a short distance with it. The poorer the quality of the oil applied to the lubricated surface, the greater will be the friction and the greater will be the distance that the pendulum will be carried along. It is convenient to equip the pendulum with a pointer, traversing a scale, on which the power developed can be read. For measuring the temperature a thermometer is let into the bearing surface under pressure. The best oil is that for which the smallest development of power and the lowest temperature in the bearings is recorded.

The lubricating value of a cylinder oil, owing to the fact that at the point of utilization it is subject as a rule to very high temperatures, cannot be determined in so simple a manner. However, we can in this case, arrive at a very good opinion as to its lubricating capacity by removing the piston from the cylinder and subjecting both to a very thorough cleansing with petroleum and then lubricating them with the oil to be tested. After the drop-feed oiler has also been cleaned and refilled with the new oil, the motor or steam engine is allowed to run three to four days, under load. Subsequent investigations must show the cylinder bore and piston to be bright and completely coated with oil. If however, in spite of an adequate supply of oil, they are dry, the oil is deficient in lubricating efficiency; it either evaporates or burns.

If a cylinder oil has been found by the foregoing tests to be free from acid and a satisfactory lubricant, it is advisable to allow the motor or steam engine to run five or six weeks on the oil and then to again inspect pistons and cylinder. If they display no incrustations, but on the other hand are perfectly bright, the oil is serviceable.

While with transmission and machine bearings oils it is not so necessary to demand that they have as high a flash-point as possible, in oils for the lubrication of steam engines and explosion motor cylinders, this point demands attention. At a certain degree of heat, for instance, the lighter components of the oil are volatilized and inflammable gases are formed, which under some circumstances may entail serious dangers. The flash point of an oil is determined by filling a small porcelain vessel almost to the brim with oil, suspending a thermometer in it and heating it carefully over a gas or alcohol flame, at the same time passing a blazing match or taper over the surface. If the flame blazes up and then dies away immediately, the flashing point of the oil has been reached and must be at once read by the thermometer. For machine bearings and transmission oils a flashing point of at least 160° Cent. is desirable, whereas for cylinder oils the flashing-point should, under no circumstances, be below 200° Cent.

Finally in testing a lubricating oil, its cleanliness must be taken into consideration and of this we can inform ourselves by smearing some oil on a piece of white paper; when held up to the light the translucent spot must be clear, otherwise the oil contains mechanical impurities that will reduce its lubricating effect. In such cases its use should be avoided, or it should be used only after being passed through a filter that will remove the impurities.

Filter Paper as a Substitute for Muslin

A MILITARY surgeon gives, in the *Umschau*, his experience in regard to domestic substitutes for bandage material. He states, among other things, that not only cellulose wadding but mechanical woodpulp, woodflour, woodfelt and woodwool, have done good service as substitutes for cotton in making dressings. They replace cotton as absorptives of fluid and cost much less.

It is only prejudice on the part of most surgeons, in favor of the old methods, says *Papierzeitung*, of June 10, 1915, that causes these domestic bandaging materials to be used less than absorbent cotton, the material for which must be obtained from abroad. The domestic substances enumerated are all differently absorptive, but serve more generally as a stuffing for swabs than as direct absorbents of wound secretions. The latter purpose is, however, admirably met by filter and blotting paper, the absorptiveness of which is little less than that of muslin. The author of the article in the *Papierzeitung* has determined the absorptive capacity of both substances as only 20 percent in favor of mull.

The absorptive efficiency of filter and blotting paper is not unfavorably affected by their freedom from germs. Because paper that is directly applied to a fresh wound tears when the bandage is removed, the writer recommends between filter paper and wound, the interposition of a thin separating layer of muslin. He gives other advice on the use of blotting or filter paper in the case of wounds and describes how from it large or small pads can be made for the absorption of wound secretions. To keep the paper in place of the wound, instead of bandages of muslin or gauze, an adhesive substance or sticking plaster may be used, but from paper itself, practicable and cheap bandages can be made.

The Aberthaw Construction Company, Boston, specialists in reenforced concrete and in industrial buildings, as well as dams and waterpowers, is about to move the main offices from 8 Beacon street to the new Niles Building at 27 School street, where the top floor has been taken. Increased accommodation, together with the desire to place all the departments close together and in proper relation to each other are the impelling causes for the change.

Wastes in the Power Plant

An Insufficiency or Total Lack of Records is Responsible for Avoidable Leaks

IN a most suggestive and informing article, contributed by Francis W. Collins to the *Engineering Magazine* for September, the author calls attention to various things about the operation of a power plant which might be changed in the interest of both economy and efficiency. Lack of records, ignorance concerning actual performance, ignorance as to output and lack of adequate standards are points to which he calls particular attention.

In regard to the lack of records he pictures a condition now existing in many public utility properties that would seem to be unbelievable. He says:

"In the first place in no case have I ever found an inventory of the plant even approximately complete, to say nothing of being correct so far as it went. If there were any records at all they covered only portions of the property, and were deficient in one or more of the following respects: they lacked dates, lacked proper description, were not up-to-date, abandoned plants were not shown on records, and other informations not necessary to enumerate here was missing. The accounting records are often of indifferent value, but generally they are worth more than any others from an historical standpoint. It is astonishing how much information is left out of estimates, plans, specifications, etc."

The author is convinced that owners of plants will sooner or later find it necessary to have actual knowledge of what their property consists. "With public service regulation the accepted thing, with industrial regulation looming up in the horizon, and with governmental activities and restrictions of all kinds coming to be the fashion, it behooves every owner to consider seriously the question of really knowing about his property instead of thinking or guessing."

Referring to an apparent lack of knowledge as to what was being done or might be done to effect the most economical operation, he points out that it is one thing to know what a machine will do, it is quite another thing to keep a finger on what it is doing. The attitude seems to be, "keep the wheels turning." How they turn is insignificant. Leaky water lines (even when buying water by meter measurement), leaky steam lines, incompetent firing of coal and incompetent boiler attendance (under local conditions which permit of remedying the trouble), shafts out of line, belts improperly adjusted, and journals needing attention, are a few examples of the things cutting down performance. They are usually viewed with indifference, or those in charge are largely ignorant of them.

Mr. Collins has found very few plant engineers owning or having the use of engine indicators. With few exceptions the plant engineer does not know whether the valves of his engines and pumps are properly set, or whether they are using steam as economically as they should or not. It is an out-and-out guess. Piston and valve leakage, worn out or improper pump packing, and all the ills machinery can be heir to are the common rather than the exception things to see.

All these things continue to exist because of ignorance as to actual performance in nine cases out of ten. In a large percentage of cases those in charge know that some particular thing is not as it should be, but they do not know how much "out of kelter" nor what the result, directly or indirectly, is in dollars and cents. It is most unusual to find any man who traces performance back to the coal pile and store room.

IGNORANCE OF OUTPUT

Discussing output it is pointed out that the output of a plant is seldom known with anything approaching an approximation. Generally, considering all the obstacles, gas plants know reasonably well their output, yet it is not rare to find smaller ones without station meters. Electric plants generally make some attempt to meter machine or station output; few do so completely, and it is usually impossible to determine for a given period what the output has been with any degree of satisfaction. Both reading and recording meters are today too cheap to let the question of installation cost stand in the way of knowing what the output is. Very few water plants meter their output.

When it comes down to a question of learning what demands a plant is being called upon to meet one encounters a "stonewall defense." And furthermore there is a complete dearth of knowledge as to what the plant should be called upon to do. This is intimately tied up with the design of the entire plant.

In the majority of cases it would appear that the location of the plant at some particular spot were an afterthought; the result of a whim of some immediate real estate profit or other selfish motive, rather than the good of the plant and the result of study and forethought. Too often the power house is without adequate transportation facilities and is far removed from the "centroid of its load," which means greater operating cost, perhaps ultimate investment cost too, through consequent transmission for a greater distance, losses due to distance, friction or elevation heads, etc. The design and equipment of the plant are not quite so indifferently handled, but the difference is more apparent than real.

COMPETITION

Speaking of competition Mr. Collins makes the observation that any plant not operating as efficiently as possible is competing with itself. Continuing he says:

"If it is practicable to manufacture electricity in a given case for four cents a kilowatt-hour and it is now costing five cents, the owners are losing money they might otherwise put into their pockets. In short, there is too much satisfaction with existing profits and conditions. We are naturally lazy. It is only when the margin begins to get narrow that there is an awakening to the fact that money is being allowed to slip through the fingers. Then ensues a scramble to recover lost ground. This can never be done. Like time, money cannot be snatched out of the realms of the past—only the present and future constitute the sources of unearned returns.

"Consequently competition, which includes increasing costs of labor and materials, is a force likely to be more severely felt in the future than in the past. The public utility is coming to be protected from competitors in its own territory. But in return for this protection it owes a duty to the public—of giving maximum service for minimum charges. The public is not slow to go after what it considers its rights.

"The industrial owner has no such protection and now it is not recognized that he owes such a duty. However there are exactions in other forms no less burdensome and in the long run just as sure to lead to trouble. His taxes are going up—they are likely to go up by leaps and bounds due to the era of sentimental government meddling in all things under the sun. His labor cost and material cost are giving him plenty to worry about.

"Then comes in the fact that anyone at all, without capital and almost without credit—the only requisite is nerve—can start up a manufacturing establishment in his own field. This upstart can play havoc unending with any legitimate manufacturer; he owes no responsibility, moral or mental. We are competition mad.

"THE HUMAN ELEMENT

"After all that can be thought of or said about studying, planning, designing or building, and all phases of operation, there remains one operating feature too little understood. I refer to the man element. In many respect better men are required to operate a small plant than a large one. I have seen a plant give passably good results solely because the engineer in charge was the only real asset around the place—the plant itself was a liabiilty. There is no doubt too that the plant force takes its cue from its superiors; that is, the men know the manager, or the owner, a whole lot better than he knows them. They know what they have to do, what they can do, what they may do. The manager unknowingly conveys his ideas, whims and and fancies to those under him. His shortcomings are better known to them than to himself.

"My experience leaves me in no doubt that on the management rests the responsibility for power house leaks, if for no other reason than that just given. That the plant is not run in the most economical manner is principally because:

"(a) The management does not get out of the employees what they can and would gladly give.

"(b) The employees are not always wisely selected. Their hiring is too often a matter of how little they will work for rather than how well will they perform their duties.

"(c) There is need for raising the plane of the employee. He should have fixed in his mind more of an ideal. The management must not permit him to drift along on a basis of 'will it do,' or 'will the old man kick.' Too frequently I hear, 'It is good enough,' or, 'It is the best we can do.'

"So many times I find that an employee makes a suggestion only to have it fall flat and after a few such experiences he keeps his suggestions to himself. The least the management can do, if the suggestion can be used, is to profit by it and show by word and action a proper appreciation, or, if the suggestion cannot be used, to turn it aside in a way that will leave the door wide open so the employee will feel entirely free, or invited, to make any other suggestions he can at any time. No fancy methods or schemes need be adopted to accomplish this end; just old fashioned horse-sense, fair and square dealings, frankness, sincerity and tact will accomplish the purpose and a good deal more.

"Then, the management must back up the suggestions. Suppose an engine really needs repairing. Nothing is cheaper in the long run than to have it done well and promptly instead of holding off until the last turn has been taken out of it. Aside from being better for the engine it is better for the whole plant, it has a great moral effect on the employees. It has far more of an effect than an incentive plan alone could have. Pursuing such a policy will do more to bring a run-down plant into better operating condition than any other one thing. It will keep a new plant in shape for longer than otherwise could be done."

Cellulose as a Substitute for Cotton

SINCE the present European war began the demand for cotton substitutes has increased in Germany. reports Consul General Julius G. Lay, of Berlin, in a recent communication to the Department of Commerce. The high prices of cotton and the possibility that they may soar higher have caused many experiments to be made with paper pulp and cellulose materials. The substitutes so far produced are generally much cheaper than cotton, but their sale has been retarded by the fact that they do not possess all of its good qualities.

The only substitute for absorbent cotton that has found a large sale in Berlin is the Zellstoff-Watte "Lignin." This particular substitute is made of pure pine cellulose and can be commercially produced much cheaper than absorbent cotton. It is chiefly used to stop bleeding. It is said that it absorbs blood better than cotton, but it cannot compete with that fiber as a dressing for a wound. Physicians state, however, that "Lignin" serves very satisfactorily as a second dressing.

Mr. Seyffert states that "Lignin" is made according to a secret process. The following prices are quoted: In 50-kilo (110.23-pound) lots, 76 pfennigs per kilo (8.20 cents per pound); in 100-kilo (220.46 pound) lots, 74 pfennigs per kilo (7.99 cents per pound), and 200 to 300 kilo (440.92 to 661.39 pound) lots, 72 pfennigs per kilo (7.77 cents per pound); f. o. b. Berlin. "Lignin" is sold in sheets measuring 13.78 by 23.62 inches and in packages weighing 8.82 pounds or in rolls weighing 2.20 pounds each.

According to a report by Consul Emil Sauer, of Goteborg, Sweden, there are two firms in Sweden that manufacture cellulose wadding from chemical wood pulp for dressing wounds. These are Frovifors Bruks Aktiebolag, Frovi, and the Stora Kopparbergs Bergslags Aktiebolag, Falun. The latter is in the consular district of Stockholm.

The wadding is prepared in very thin sheets—like tissue paper, but crimped—and in general appears to be manufactured in the same way as tissue paper. This consulate was not able to secure details regarding the processes of manufacture, as these are held secret. The Frovifors Company, however, expressed a willingness to sell its process to a American firm.

A recent article in the Yorkshire *Post* described in a very interesting manner the collection in Westmoreland fells—it also is found on the Yorkshire oors—of the bog moss *Sphagnum cymbifolium*, which is of great value as a surgical dressing. The moss is permeated with minute tubes which in a natural state hold water eight or nine times the weight of the plant, so that when it is dry it is one of the ost absorbent materials known.

It is antiseptic, soft, light, and cool. As very little preparation is necessary before use if it is carefully gathered—for it has only to be sterilized and placed in flannel bags—it is a very economical dressing. It has fro some time been used in hospitals in this country [Great Britain] and before the war was supplied from Germany. In German towns it is said to be a common sight to see country women with big baskets of plants going into pharmacies to sell or exchange their goods.

New Papermaking Inventions

Pulp from Cotton Plant Waste

A PROCESS of treating waste parts of the cotton plant for the production of paper pulp is provided in a patent issued to Mark W. Marsden, of Philadelphia, assignor to Economic Power and Products Company, of the same city. In a preamble to the specifications of the patent, which was issued June 15, 1915, and is numbered 1,143,587, the inventor gives the following account of the cotton plant. He says:

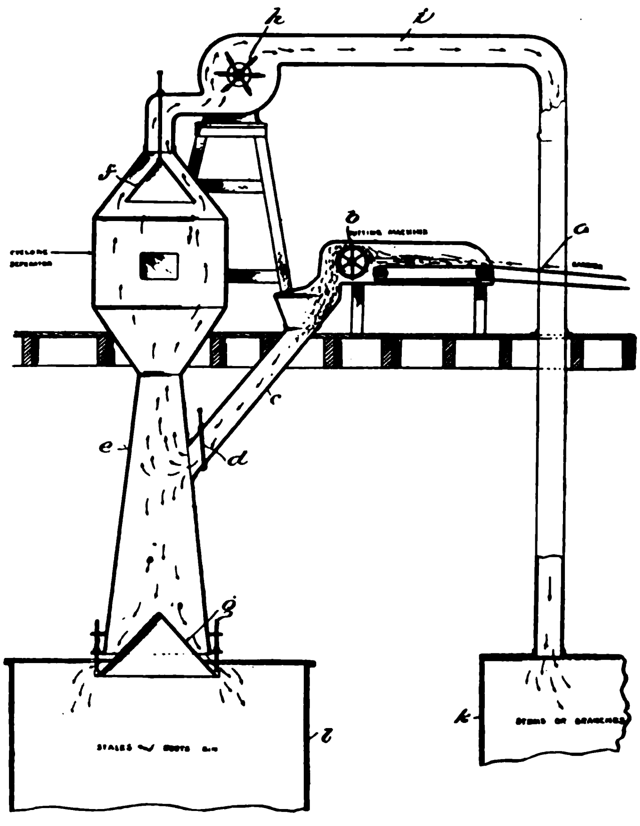
In America, India, and Egypt the cotton plant is cultivated as an annual; but in Brazil the plant assumes an arborescent or treelike form and produces cotton bolls for several years in succession. It is therefore termed a "perennial" plant. In the United States the main stalk or stem of the cotton plant grows generally to a height of from four to six feet. It has numerous auxiliary stems or branches, which lengthen in growth, and these produce the first flowers and cotton pods. The main stalk is made up largely of soft woody or cellulose tissue, seemingly mixed with pectose material and an outer layer of bark containing bast fibers. The stems or branches contain what is ordinarily called "pith" or corklike tissue, around this a woody layer, and then a bark containing bast fibers. The relative amount of bast or long fibers is therefore larger in the branches than in the heavy stalk. The presence of a large percentage of short woody fibers in admixture in this material will be of benefit to it for papermaking, as one class of fibers will complement the other, the long fibers interlacing and strengthening the sheet and the shorter ones filling in and giving it body. It is thus evident that the cotton stalk is a vast source of technically valuable fiber.

The principal objects of the present invention are to convert the socalled "waste" substances or products into a disintegrated fiber useful in the manufacture of paper and also available in the manufacture of textile fabrics and felted goods.

In Letters Patent No. 781,612, granted to me, January 31, 1905, I describe and claim a method of utilizing the waste substances of the cotton plan and also the ultimate product of saidmethod. According to the methof this prior patent, the stock composed of an indiscriminate mass of stalks, stems and roots, after a prescribed preliminary treatment consisting of comminuting, crushing, and washing, is treated in a steam tight digester. I have since discovered that the stems, being very tender and of lighter and less dense material than the stalks, require less digester treatment and consequently when both are treated together at the same time in the same digester, the stems are reduced to a pulp before the incrusting matters of the heavier bodies, such as the roots and stalks, are even softened. Otherwise stated, the comparatively light and fragile stems are cooked too much and by a chemical solution entirely too strong so that the resultant product is weaker and hence inferior to a product of separate or selective treatments.

The present invention therefore contemplates the separation of the lighter and weaker factors, such as the tender stems and branches, from the heavier and tougher materials, such as the stalks and root, prior to the digester or reduction tretmaent, and cooking or digesting them separately. By this selective mode of treatment not only do I obtain a stronger and hence more durable and desirable product, but I also effect a great saving in time, labor, and chemicals, in that the stems and similar tender bodies are reduced in about half the time required under my old method of treating all the parts in common.

The accompanying drawing is a sectional elevational view of apparatus that has been found eminently satisfactory in mechanically separating the light from the heavy components of the stalk, but I do not confine myself to this particular type of separator since it is obvious that there are many separators that will accomplish the desired result.



MARSDEN'S APPARATUS FOR TREATING COTTON

In the practise of the invention, the plants after harvesting are pulled or otherwise detached from the soil and the dirt and dust removed therefrom in any suitable manner—for instance, by the action of the well known rotatable duster. The stock, consisting of the stalks, stems, and roots, is then conducted by a suitable conveyor *a* to an appropriate crushing and comminuting machine *b*, which discharges into a downwardly inclined chute *c* leading to a suitable separator. The chute may be equipped with a gate or throttle *d* so as to readily control the feeding of the comminuted stock to the separator. The separator of the drawing is of the cyclone type consisting of a separator barrel or column *e* with adjustable upper and lower cones *f g* and a complemental suction fan *h*, under the influence of which the lighter particles of the stock are sucked or drawn through a conveyor tube *i* and deposited in a suitable storage bin *k*, while the comparatively heavier factors, consisting of the pieces of stalks and roots, gravitate or fall into a bin *l*.

The contents of both bins are then or at a subsequent period separately washed in clear water in order to remove foreign substances and impurities. The cleansed, comminuted, and crushed mass (say of the heavier and more dense stock, consisting of the stalks and roots) is then subjected for a period of from three to six hours, more or less, to the action of steam at fifty or sixty pounds pressure, more or less, and water. This may be accomplished in a steam tight digester, to which I add clear water for saturation.

The purpose of this treatment with heat, moisture, and pressure is to extract sugar, tannin, natural coloring matter, and other chemicals present, all of which, whether singly or collectively, are hereinafter referred to by the term "extractive matter." This treatment seems to act on the pectin present in admixture with the cellulose in the woody part, dissolving this and converting the starchy matter and invertible carbohydrates of the bark into sugars, while at the same time it loosens up and partly frees the fibers from the cementing matters and mineral salts.

Under this treatment the stems will yield an abundance of short cellulose fibers from the woody tissue and a relatively smaller amount of long bast fiber, together with sugars, from the invertible carbohydrates, while the branches will yield a larger amount of bast fibers and fermentable sugars and less of the shorter cellulosic fibers.

When the treatment has progressed so far that the extractive matter is separated and in solution, it is drained off into another retort or tank and recovered in any suitable manner. This extractive matter has heretofore been one of the chief obstacles to the successful treatment of the cotton-plant to obtain a commercial disintegrated fiber; but it is readily removed by my process and in a condition to be easily recovered. The wood and bark contained in the stalks, stems, and roots being in a comminuted and crushed state, and deprived of extractive matter, are in a desirable form to be still further reduced by the addition of a sulphide or alkaline solution of sufficient strength to dissolve under a steam pressure of seventy-five to ninety pounds, more or less, the resinous or silicious material present in the form of cementing or incrusting matter and to separate and disintegrate the fibers. When this has been accomplished, I drain off the liquor and by well-known methods recover the chemicals, which may be used over again in reducing other material. The material remaining in the digester (which has been converted into lignocellulose) is next subjected to the action of water and steam until any chemicals present are completely removed, leaving a pure, disintegrated, ligneous, and cellular fiber, which may be spun into yarn or bleached or colored and made into paper.

The lighter and less dense stock consisting of the tender stems and branches is subjected to the same steam and chemical treatments, except that it requires relatively less time of treatment and a weaker solution, all of which, however, is to be determined and governed by attendant conditions. It is manifest of course that the fibrous products of these separate treatments are ultimately brought together and combined whether for papermaking or otherwise.

A New Sizing Process

VARIOUS processes are known to paper manufacturers for the sizing of paper fibers by emulsions of free rosin. By saponifying the rosin with the aid of insufficient quantities of alkali, a rosin size is produced that yields a paper size rich in free rosin. In the same manner, by simple dilution with water or the introduction of carbonic acid into the size-milk, free rosin is separated in the form of emulsions. In almost all cases the size emulsion, produced in one way or another, has been added to the pulp, in the beating engine, without previous preparation.

In the beater acids or acid salts, such as sulphate of magnesia, alum, etc., are used to precipitate free rosin on the fibers. Sulphate of magnesia, or Epsom salt, has also been used to effect a decomposition of the rosin emulsion. However, this method of paper sizing has not proved generally uniform in its effects and is effected at the cost of a comparatively large quantity of sizing material. Owing to the hardening of elements of the manufacturing water, which tended to combine with and reduced the resinate of soda in the size solution, serious working difficulties are caused, especially loss of rosin, etc. In the customary process, the size emulsion often reacts with the alum solution, without effecting uniform distribution and dilution, and the varying temperatures in the beating engine sometimes cause widely different precipitations, some fine, some coarsely flocculent in character; the method of precipitation also differs widely, especially since the use of waste water from the paper machine in the beating engine has been introduced.

A surprisingly novel effect is produced if first, separately from the beating engine process, a more or less thorough decomposition of the size emulsion is effected in the presence of colloidal substances. It is found that a homogeneous rosin emulsion may be formed, with a subsequent decomposition of the rosin soap to any desired extent.

A process of this kind is the subject of German patent No. 281,515, class 55c, granted to Willi Schacht, of Weissenfels on the Saale, the inventor's claims for which read as follows:

"Process for the production of size emulsion, especially for the sizing of paper, therein distinguished that fully boiled rosin soap to which colloidal substances, such as starch, casein, animal glue, saponified or unsaponified oils or fats, vegetable albumen, waterglass and similar substances have been added before addition to the paper pulp, are more or less decomposed by fluid or gaseous acids or acid salts, using at the same time a current of air."

Details of the new process are given in the patent specifications as follows:

A rosin soap is produced in the known manner, which with an addition of colloidal substances, such as starch, casein, animal glue, vegetable albumen, waterglass, or the like, produces a size emulsion of predetermined composition and concentration, or we employ commercial rosin-size, of similar composition, in the preparation of this rosin emulsion. With the rosin-size of commerce, to which no colloidal additions have been made, the necessary colloidal material can subsequently be incorporated. These rosin sizes are then, for the preparation of the size emulsion, decomposed to such an extent by the gradual addition of acids or acid salts, especially bisulphates, bisulphites or bicarbonates of the alkalies, under suitable mechanical manipulation, that for the final acetification only about

Continued on page 32

American Paper and Pulp Association

Executive Committee
Henry E. Fletcher, *Chairman*
W. G. MacNaughton
Ernst Mahler

Technical Section

Publication Committee
Charles F. Rhodes, *Chairman*
Henry F. Obermanns
Thomas J. Keenan

Membership, either active or associate, is open to any person of technical education occupying a position with a member of the American Paper and Pulp Association; persons who have special qualifications or experience, and others who are qualified by their connections to support the aims of the section.

The objects of the Technical Section of the American Paper and Pulp Association as set forth in the Constitution and By-Laws are: To stimulate interest in the science of pulp and paper making; to provide means for the interchange of ideas among its members, and to encourage original investigation.

A Committee Actively at Work

THE Committee on Standard Methods of Testing Materials Used in the Manufacture of Paper, of which H. P. Carruth, chemist for the American Writing Paper Company, is chairman, has completed its organization and the full committee now consists of H. P. Carruth, chairman; Raymond S. Hatch and Max Cline, associates.

A meeting of the committee was held at the office of the chairman on Saturday, October 9, when it was decided that subcommittees should be appointed to standardize methods of sampling and analysis, such subcommittees to be made up of three men, one of whom should be a member of the original committee and would act as chairman of the subcommittee. This was decided upon in order to centralize the work of the subcommittees and make it possible for the original committee to keep in close touch with all the work being done. Subcommittees on the following subjects were decided upon:

Rosin and Rosin Sizing—Max Cline, chairman.

Animal Size Stock and Glue—H. P. Carruth, chairman.

Starch and Starch Derivatives—H. P. Carruth, chairman.

Pulp, Tests for Physical and Chemical Qualities, except Moisture— R. S. Hatch, chairman.

Fillers—Max Cline, chairman.

Colors, Dyes and Pigments—R. S. Hatch, chairman.

Coating Materials—Max Cline, chairman.

Chemicals, as Alum, Soda Ash, Bleach, Caustic Soda, Vitrol, Lime, etc.,—Max Cline, chairman.

Rags, Moisture Tests—R. S. Hatch, chairman.

Rag Halfstuff—H. P. Carruth, chairman.

Pulp, Moisture Tests and Sampling—No appointments were made for this committee, owing to the fact that a large amount of work has already been done by a committee appointed by President Moore to act jointly with a committee appointed by the Pulp Importers' Association, and it was, therefore, thought advisable to withhold any action on this subject until the matter had been taken up with the parent association, to which end preliminary steps have already been taken.

The committee decided that such subjects as coal, lubricating oils and greases, and other materials common to almost all manufacturing industries, were outside of the scope of this committee, who will recommend that special committees on these subjects be appointed at the next meeting of the Section.

The Committee on Standard Methods of Testing Materials Used in the Manufacture of Paper will welcome the cooperation of all concerns and individuals interested in the subjects to be covered by this committee.

The committee will appreciate suggestions not only from members of the Technical Section, but from any others interested in these subjects, whether consumers, dealers or manufacturers.

Membership in the Technical Section

In response to many inquiries regarding the aim and scope of the Technical Section of the American Paper and Pulp Association which have reached the secretary's office since the meeting at the Grand Central Palace on September 23, it has been deemed advisable to set forth anew some of the advantages of membership and at the same time indicate who are eligible.

Membership in the Technical Section is open to any person who has had a satisfactory technical education, or who has special qualifications and experience. Associates are received who will undertake to assist and support the aims of the section, or who by virtue of their qualifications are likely to further its work.

It is expected that many designers, constructors and dealers in paper and pulp machinery, manufacturers of paper mill supplies, salesmen, teachers of paper chemistry and technology and others, will improve the opportunity of becoming identified with the activities of the Technical Section by joining as associate members.

It is the purpose of the founders to make membership in the Technical Section attractive as well as valuable to those connected with the industry, and mill chemists and engineers will be encouraged to look upon this organization as a clearing house for ideas in pulp and paper technology, a forum for the communication of results in experimental and research work.

Large and far-reaching plans for the development of the section's activities are now under way, committees having been appointed for the investigation of selected subjects. In these efforts for the furtherance of the movement and the operation of the section on a firm foundation, the committee is receiving the active cooperation of the members of the American Paper and Pulp Association and affiliated bodies.

There is no initiation fee and payment of the annual dues of $5 entitles members to receive the weekly numbers of PAPER as issued, PAPER being the official journal of the Technical Section.

The officers of the Technical Section are as follows:

Executive Committee—Henry E. Fletcher, Alpena, Mich., chairman; William G. MacNaughton, Ernst Mahler, Charles F. Rhodes and Henry F. Obermanns, associates.

Secretary Treasurer—Thomas J. Keenan, 117 East 24th Street, New York.

PAPER

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American Paper and Pulp Association

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A Nonpartisan Tariff

SOME weeks ago we took occasion to express at length our views concerning the desirability of taking the tariff question out of politics. Since then we have observed the same insistent demand coming from many sources. The daily press and other publications have devoted considerable space to a discussion of the subject, all of which seems to be favorable to the creation of a tariff commission, and a number of organizations have by resolution placed themselves in line with the suggestion.

We do not see how the proposition can fail to meet with the approval of all classes of people, with one exception: the professional politicians will not generally favor it for the very good reason that the tariff issue has long been one of the principal tools of their trade. It is hard to recall a political campaign, either national or local, in which the leaders did not draw largely upon the tariff issue for their ammunition. Whether the tariff was at all involved in the election or not, the divergent views of the two leading political parties have always been marked more by their tariff attitude than by anything else. It is perfectly natural therefore that that class of persons who live on political agitation would hesitate to surrender this perennial subject of controversy.

In spite, however, of the attitude, wise or otherwise, of the professional politician, the men of this country who have its welfare at heart are practically all agreed that the tariff should no longer be adjusted along the lines of party policy, but that its principles should be determined solely upon sound economic bases in the interest of all. If this be true, there has certainly never been a time in our history so favorable to the adoption of the new method in dealing with the subject. Parties, like individuals, are not always open to conviction, and hesitate therefore to admit that they have ever been wrong. Party pride very often prevents a change of policy which is manifestly needed. At this particular time, however, a splendid opportunity is afforded both parties to start in upon a new line without any apparent departure from their former convictions.

In the first place, the difference between the two great parties on the tariff is not what it once was. It does not do to assume that every man who is a Democrat is a free trader, or that every man who is a Republican is a high protectionist. The Democratic party is far from being agreed upon the measure of the tax that should be levied upon American imports; and it is just as obvious that the Republican party is far from being a unit on the proposition.

We have today Democrats who are free traders, Democrats who are protectionists, Democrats who are for a tariff for revenue only, and Democrats who are simply Democrats without knowing what they are for. On the other hand we have Republicans who are high protectionists, Republicans who do not believe in maintaining the same rate of duties that have heretofore prevailed, Republicans who call themselves progressive (some progressing in one direction and some in another), and Republicans who are Republicans because they were born that way, without being able to give a reason for the faith that is in them. Neither in Congress nor out of Congress is there a complete party agreement, and if anyone should today ask for the attitude of either party on the tariff, it would be impossible to state it.

In a general way Republicans are for protection, but you scarcely find any two of them who are for the same measure of protection. Democrats in a general way are for a tariff for revenue, but such have become the enormous requirements of the Government that nobody knows where a revenue tariff and a protection tariff meet, or lap over.

All things considered, the sensible thing is for us to lay aside our political bias and undertake in good faith to work out a policy which is in the interest of the country, without regard to the advantage or disadvantage it may give to any political organization; and, as we have already stated, our present condition seems to invite such action. The entire commercial situation, domestic and foreign, has been so thoroughly disturbed by the European war that we are compelled, if we act wisely, to forget our theories of the past and wrestle with new problems which no one has undertaken to solve in days gone by. Indeed the question of a tariff is by reason of these changed conditions made a new problem and one to be dealt with just as we dealt with it in the beginning—upon its own merit and not in keeping with any precedent. Neither party, therefore, is surrendering any principle, but on the contrary both will be displaying wisdom and patriotism by accepting facts that are so patent and seeking forthwith to adapt themselves to the changed situation.

As we have stated in previous articles, it is utterely impossible for anyone at this time to forecast the commercial situation which will confront us at the end of the European war. No one knows how that war will terminate, nor how our foreign trade will be affected in any event. For that reason there is the most urgent necessity that we should abandon the rule by which we have heretofore been guided, that of tying ourselves down to a definite and fixed tariff law; but we should provide a more flexible system under which changing conditions could be promptly met.

As it is now, a tariff once fixed along party lines ordinarily means that it must remain unchanged until the country swings to the other extreme and puts another party in power. This should not be the case. Economic questions should be met and disposed of as they arise without waiting for a political upheaval and for a revision which is too often made not to meet the public demand, but to meet political exigencies.

The only practical way to accomplish this desirable change is, as we have suggested, and as has been advocated by many, the establishment of a tariff commission. And let us not forget that no tariff commission can be created to which can be delegated the taxing authority vested in the Federal Congress. The powers of such a commission are necessarily limited, and to a great extent its work is advisory. If, however, there should be maintained such a commission, composed of capable men, in whose judgment and integrity the country had confidence, it is scarcely conceivable that any political party dominating Congress would dare ignore entirely the commission's recommendations.

We would have an unbiased tribunal charged with the work of carefully investigating actual conditions and reporting facts rather than fancies. Upon its advice, changes in the tariff would be made from time to time to meet changing conditions in trade and not for the purpose of gaining political advantage or discharging political obligations.

The important thing as we see it now is not so much to create a sentiment favorable to a nonpartisan tariff commission, but to see to it that the sentiment already existing is given a full and effective expression. It will do little toward furthering the plan for creating this commission for interested individuals to merely entertain decided views or even to express them to one another in a formal way. Some step should therefore be taken by the business men to impress upon the coming Congress the importance of this action and to let that Congress know the extent to which such an opinion prevails.

Every industrial organization which has influence should as a body, as well as individually, make known its desire to the authorities at Washington. In addition to that, we would suggest that every paper manufacturer who believes in a tariff commission take the matter up at once with his local representative in Congress, as well as State Senators, and do everything in his power to crystallize this sentiment and enforce its adoption.

It is the purpose of PAPER to continue giving expression to its decided views along this line, but unfortunately there are many influential political leaders and Government officials in this country who, not knowing its value, do not regularly read the publication. It is their misfortune.

Ascending Costs

IN a recent issue of the New York *Times* we find on its financial page the following item, which is in exact accord with what we have been trying to proclaim through these columns for some time.

> The upward tendency of manufacturing costs in many lines makes it essential to keep a close watch on the various lines of expense. Otherwise the producer may find that the reason why he is able to put out an article below the price of his competitor is due to a mistake in his cost calculations. Not only have wages increased, but materials used in manufacturing have also shown marked advances recently. With increased prosperity it is natural to suppose that prices are apt to become more or less inflated, and the manufacturer who does not make the necessary allowances will find that he is operating at a loss.

We commend this statement to our readers and urge them not only to give it careful consideration, but to act accordingly.

There are many ways in which the cost of manufacture is gradually increasing, and if we are able at all to read the signs of the times, there is little prospect of any reduction whatever, while, on the other hand, the probabilities are that manufacturing expense will continue to climb.

Chemical Exposition to Technical Section

GRAND CENTRAL PALACE, NEW YORK, Oct. 1, 1915

Mr. Thomas J. Keenan,
Technical Section,
American Paper and Pulp Association,
117 East 24th Street,
New York City.

Dear Mr. Keenan:

The management of this Exposition desire to express their appreciation both for the hearty support and cooperation given by the officers and members of your Section to make this Exposition a success through their meetings, and for their splendid efforts in making such elaborate exhibits showing the past and present activity in the subject in which your members are particularly interested; all of which lent such added interest to the visitors to this Exposition, of whom there were 63,377.

Again expressing their kind appreciation, they are

Sincerely,
NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES

THE WEEK'S LATEST TRADE NEWS

The Strike Situation in Northern New York

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 12—The strike situation at the several mills in this part of the State remains quiet with the exception of a slight disturbance a few nights ago, when two Italian strikers set upon James N. Hart, employed by the West End Paper Company, of Carthage, and severely beat him. Hart, it is asserted, was just leaving the mill, when the two Italians called him a scab and several other names, which he resented. He set his dinner pail down and made a pass with his fist at one of the Italians. At this they set upon him, knocked him down and kicked him about the head and body, seriously injuring him. They were arrested on the charge of assault in the third degree. The case of one of them was set down for trial today and the other will be held tomorrow. Many witnesses will be sworn by both sides.

During the past few days both the manufacturers and the strikers have reiterated their statements made several weeks ago that they will not give in, which makes it apparent that the strike will continue. The sheriff has a large force of deputies at the St. Regis mill at Deferiet, guarding the property and there are about twenty members of the militia remaining there. The strikers continue to maintain pickets, though they are fast disappearing as the approaching cold weather makes it necessary that they go elsewhere and secure jobs, since they have families to support. There is no hint of withdrawing the militia or deputies, who are protecting the plant.

BLACK RIVER.

Company Formed to Work the Hall Process

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 12—Watertown capital has just organized a new paper company with Edward M. Hall, of the Hall Process Company and Taggarts Paper Company, of this city at the head, and A. F. Richter, of the Stebbins Engineering Company, in direct charge of the construction and management of the mill, which is located at Northumberland, N. H.

The company was incorporated at Lancaster, N. H., October 2, and is known as the Hall-Richter Company. The capitalization is $32,100 and the directors chosen for the first, second and third years are E. M. Hall, A. F. Richter and M. D. Nutting, while the officers are Edward M. Hall, president; A. F. Richter, treasurer and general manager and M. D. Nutting, secretary. The mill and principal offices are located at Northumberland and Mr. Richter and Mr. Nutting left here Friday noon by automobile for that place, where constructive operations were started today under the supervision of Mr. Richter. The present buildings consist of a 10-ton groundwood mill, a 300-horsepower boiler plant and a machine room. It is expected that the plant will be in operation and making groundwood in about six weeks. An 80-inch fourdrinier paper machine will be installed and either catalogue or machine finished book paper manufactured.

The Hall process, which was invented by Mr. Hall and patented and which is being adopted by a number of pulp and paper companies throughout the country, will be used by the new company. This process was first put into operation at the plant of the Taggarts Paper Company, in which Mr. Hall was the general superintendent for a number of years, during which time he was also general superintendent of the St. Regis Paper Company. His process is said to be most efficient and economical.

Mr. Richter is an engineer and for years has been engaged by the Stebbins Engineering Company in constructing pulp, paper, sulphite and kraft plants.

BLACK RIVER.

Aftermath of the Rioting at Deferiet, N. Y.

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 12—Resulting from the further argument in the case of the seven strikers charged with rioting at Deferiet on the night of September 2, when the second strike was called at the plant of the St. Regis Paper Company, three of these were discharged during the past few days by City Judge J. A. McConnell, of this city. This makes fifteen of the original thirty-six arrested that have been discharged. Seventeen were held to awit the action of the Grand Jury now sitting and because there was doubt regarding the other seven no decision was reached until a few days ago, when the court discharged the three mentioned for lack of evidence against them. The cases of the other four remain to be heard and there is a possibility that they also will be discharged, leaving but seventeen to answer to the charges preferred against them by the company.

Attorney T. Arthur Hendricks, of this city is defending the men, and Attorney Fred B. Pitcher, former District Attorney, is acting for District Attorney Claude B. Alverson.

On Friday another striker, who is secretary of the papermakers union at Carthage and formerly employed at the West End Paper Company, was arrested on a charge of violating section 720 of the penal laws of the State, it being alleged that he had been calling the nonunion employees at the mill "scabs." The defendant pleaded not guilty when arraigned and asked for a jury trial, which will be held next Friday. In the meantime he was compelled to give bail in the amount of $200 which he did. He will also be defended by Attorney Hendricks.

BLACK RIVER.

Thomas P. Wilkinson is Dead

The death of Thomas P. Wilkinson, of Wilkinson Brothers and Company, Inc., New York, at the home of his son in Montclair, N. J., on Saturday, October 2, recalls some interesting paper history.

Born seventy-six years ago in East Farnham, Canada, Mr. Wilkinson left when eighteen years of age and settled in New Bedford, Mass.; but he did not remain long there, as he had been invited to come to New York by his brothers, Joseph and William Wilkinson, who were then engaged in the paper trade under the firm name of Wilkinson Brothers and Company.

In January, 1867, Joseph Wilkinson retired from the firm and his place was taken by Thomas P. The capital of the new partnership was $3,500. Both members exerted themselves and it was not long before their business began to grow and success was certain. In 1871, W. L. Leach, a brother-in-law, was admitted into the business. About this time Wilkinson Brothers & Company started to build the old Derby mill at Shelton, Conn. The mill was completed within two years and operated on jute papers and colored specialties. Fire destroyed the plant in 1879, but it was rebuilt the following year. For about four years, the firm had the contract to make postal cards for the Government.

In 1880, the company was enlarged by the addition of C. A. Whedon and George S. Arnold. Both of these men remained partners for about ten years or more. The sphere of the firm's activities was widened in 1882 when the Hudson River Water Power Paper Mills were constructed at Mechanicville, N. Y., and the manufacture of sulphite started. The mill was later taken over by the Duncan Company, which, in turn, was absorbed by the West Virginia Pulp & Paper Company. Mr. Leach withdrew from the firm in 1894. Two years later, Thomas P. Wilkinson and his sons incorporated under the name of Wilkinson Brothers and Company, Inc. Thomas was made treasurer and general manager and held this position up to the time of his death.

WHY NOT TO-DAY?

IF you have heard about TALCLAY—how it is taking the place of Domestic and Imported China Clays in every department of paper manufacturing—

If you already know about its SUPERIORITY over various Talcs produced in this country—how it saves money for its user by its FREEDOM FROM GRIT AND MICA—GREATER RETENTION—etc.—

If you could see the extreme care we exercise in endeavoring to make our product the BEST on the market—how we are very particular to have the Pure Rock furnished by our mines ground and prepared in such manner that when our customers receive it they get a SELECT CLASS OF GOODS—

If you find that our prices were not prohibitive when the grade of material, the reputation it has succeeded in attaining, and the results it produces are considered—

THEN, WILL YOU CONSIDER THE USE OF "TALCLAY" TODAY?

TALCLAY

FOR

Filling and Coating

This product is GUARANTEED UNIFORM, always. It will be found FREE OF GRIT and MICA. It has NO MOISTURE. It gives LARGER RETENTION. It REDUCES WIRE and MACHINE EXPENSE and CUTS MANUFACTURING COSTS.

Economy in the manufactured sheet is the characteristic which insures its welcome into hundreds of paper mills TODAY!

If you want to know more about TALCLAY—desire a sample of finished product, also one of crude TALCLAY rock—desire to know who uses this material and what they say about it, a postal or letter will receive prompt attention and the required information. We'll even send you a quantity for trial—FREE OF ANY CHARGE—if you wish. May we?

I-N-V-E-S-T-I-G-A-T-E

The St. Lawrence Talc Co., Inc.

P. O. Box 171 **Natural Bridge, N. Y.**

Business is Picking Up in the Northwest

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12.—There is no denying that the paper business is feeling the effect of the wave of business optimism that is sweeping over the country. In fact the betterment of conditions that has been going on gradually of late has been noted for some weeks in this correspondence. The substance of things hoped for in this respect previously is now fast becoming actual, thus justifying the convictions of some manufacturers who have been predicting for months that the business clouds were due ere long to roll away. New business at the mills has picked up decidedly, and is picking up more all the time. Of course mills making different grades are differently affected. Your correspondent knows of some mills that are booked ahead at this minute for sixty days of normal output. This is the peak point however. Most of the mills are not so well fixed. All mills are running full time, however, and most of them are comfortably booked ahead. In this respect there is reason to believe that the mills of this district are better off than the mills of the eastern States, as a general rule, judging from reports received here from there. Just why this should be, cannot be explained, but it is doubtless the fact.

Moreover much talk of higher prices is being heard, and it seems as though the event certainly would justify it. As everyone knows the industry has been passing through the leanest kind of times, when business in many cases has been accepted without much regard to the relation that should exist between prices and costs. It is inevitable that this evil will be remedied just as soon as increasing demand permits it, which according to present outlook will not be far away. But there are other factors also operating to force price increases, such as the rising price of sulphite, which threatens to go out of sight, due to the curtailment of usual receipts from abroad.

No one knows just what the business future holds in store for the paper manufacturing industry, but barring international complications it seems as though it must be one of two things, either normal business or a boom. Normal business is what manufacturers want. A boom, with its disturbing accompanying features and likely eventual collapse is not what is wanted. The working out of the situation will be intently watched.

Safety First Movies To Be Shown

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12—A dispatch from the capital of Wisconsin says that among the fall and winter attractions for the show houses and halls of Wisconsin this coming year will be the moving picture safety show of the industrial commission, "bigger and better than ever." Last year the venture was so completely successful that the commission has decided to resume the good work for the coming season. Practically every industrial community in the State will be visited and the moving picture films and stereopticon views will be shown to tens of thousands of workmen and their families.

Through the complete destruction by fire last year of the Edison plant in New Jersey, the commission is unable to obtain a duplicate of one of the films that proved most popular last year. Efforts have been made to obtain this duplicate, but without success. It is possible that efforts will be made to stage an entire new production that will tell in a graphic manner the hazards of industry and the best means of minimizing these hazards in Wisconsin.

During the coming year, the new building code of the industrial commission, which was compiled and put in force in compliance with legislative mandate, will be a matter of more than passing interest to architects, contractors and owners. In this connection, the industrial commission will have a separate set of stereopticon views designed to illustrate the important points in the prevention of fire and accidents. A lecture in connection with the pictures will be given by a deputy of the industrial commission who is in charge of the department's building inspection.

One of the unique features in connection with the commission's safety shows has to do with expense to the State. The show will be given only in those communities where employers make up the fund to pay for the rent of a theater or hall, and for the expenses of the moving picture machine and the operator. These employers pay even for the printed programmes and tickets of admission.

No Injury to Fishes From Waste Liquors

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12—It has frequently been contended in paper-manufacturing localities that sulphite liquor and other refuse from fiber and paper mills, when discharged into the streams was responsible for killing game fishes. On this point a recent report by James Nevin, for many years chairman of the Wisconsin Fish Commission, which commission at the last session of the legislature was merged with the State Conservation Commission, entirely acquits the mills of any such crime. Mr. Nevin says that complaints frequently were made to the commission that the paper mills were killing the fish, and that responsive to them he made several careful investigations. As a result of these investigations he was wholly unable to substantiate the charges, and his personal opinion is that the injury to fish life on this account is either non-existent, or so small as to be entirely negligible.

If there are any paper-manufacturing communities in the country that are being harassed in a similar way by worthy but misinformed conservationists, it might be well for their mill interests to correspond with Commissioner Nevin and secure the backing of his authoritative opinion.

Mr. Welsh's Optimistic Views on Business

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 12—An interesting view of the situation in the paper trade, since the revival in business during the last few weeks, is taken by John Welsh, manager of the Green Bay Paper and Fiber Company. Good business is here to stay, he believes. In discussing the situation today he said: "The business that has developed lately is legitimate business, it is healthy business. The country has gotten over the political scare and conditions are adjusting themselves. Orders that are now being placed are for merchandise that is needed for consumption. The business-man-politician has decided to let things alone and allow the officials elected to conduct affairs of Government tend to their duties unhindered.

"There is a new deal on and the people elected to office have been left to run the Government, the others have found out they can do the best service by letting things alone. It looks to me as though Wilson would 'fill the dinner pail' despite the obstacles put in his way by the old party that has been broken up."

Unless Citizens Act Navigation May Stop

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12—Considerable comment is being heard in this valley over the project mentioned in this correspondence last week of farmers on the upper Fox and Wolf rivers to induce the Government to lower the level of Lake Winnebago a foot by deepening the channels of the lower Fox river and cutting down the Menasha dam one foot.

The decapitation of the Menasha dam may be dismissed at once as a rank improbability, but the agitation seems to be bringing out the fact that the Government is actually getting tired of maintaining the works necessary to navigation on this river, so that unless the people interested do something, it may abandon the whole enterprise. It takes the ground that the amount of transportation carried by the waterway is insufficient to warrant the expenditure of the money necessary every year to keep up the improvement. It is disposed to insist that if the people of this locality want to keep navigation going that they share a portion of the expense until such time as the business grows to such size as to warrant the Government in assuming the entire burden. Just what the result of this attitude of the Government will be, cannot now be predicted. Navigation and waterpower are intimately connected, and navigation could hardly be abandoned without working serious injury to waterpower interests.

Why Try to Outbid the War God?

The tremendous and unprecedented foreign demand for leather for military purposes is naturally forcing prices higher and higher.

Why should you, the user of belting, pay this "war tax" on leather when you can buy rubber belting from us at "peace prices"?

Thirty years' investigation of belting requirements in every power line qualifies us to recommend the right belt for every purpose.

RUBBER BELTING

Quaker City—Crown—Hercules

These three brands solve the belting problems for practically all classes of power transmission duty, conveyor purposes, elevator work, etc.

In quality, workmanship and performance, these belts are the ultimate values in their grades.

You owe it to yourself to investigate.

Many belt users do not realize to what extent rubber belting would increase efficiency and effect economy in their plants.

Acquaint us with your requirements and conditions—we will lay before you convincing facts, figures and PRICES.

This service of our Belting Experts is without charge or obligation.

QUAKER CITY RUBBER COMPANY

Manufacturers of Mechanical Rubber Goods

PHILADELPHIA
629 Market Street

CHICAGO
182 West Lake Street

PITTSBURGH
211 Wood Street

NEW YORK
207 Fulton Street

Dayton Paper Bottle Co. to Resume

[SPECIAL TO PAPER]

DAYTON, O., Oct. 12—Receiver B. Byron Cundiff, of the Dayton Paper Bottle Company, stated Thursday that according to present indications the plant will be in operation again within the next week or ten days. He says that the necessity for the appointment of a receiver arose from two reasons. First, he says, the concern started in operation after its incorporation two years ago, without having sufficient working capital. The crisis was further hastened by the fact that the financial and industrial depression came on just at a time when the company was in the greatest need of encouragement. He says now that business is greatly improving, a large number of substantial orders have recently been booked and that prospects for the future were never so bright. The liabilities of the company are approximately $4,000 while the assets are in excess of $10,000. He says he believes that arrangements can be effected whereby the receivership can be lifted within the near future.

NEWS OF THE STATE IN PARAGRAPHS

Fire early Thursday morning damaged the plant of the Toledo *Times*, one of the leading daily newspapers of Ohio, to the extent of $30,000. The blaze originated in the engraving plant on the third floor. The *Times* is now being printed on the press of the Toledo *News-Bee*, where it will continue to be printed until the necessary repairs can be completed.

A report submitted Thursday by the State Industrial Commission showed how the State of Ohio watches over the safety and health of her industrial workers. It covers the period extending from September 1, 1913, to December 31, 1914, and shows that approximately 20,000 establishments had been inspected, 11,000 orders issued and 31,000 distinct requirements issued for changes in buildings and working conditions. Of this number of requirements 61 percent were for the protection of life and limb, 22 percent for health, sanitation and comfort and 12 percent related to the employment of women, children and minors.

No clues have as yet been obtained by the Richardson Paper Company, of Lockland, regarding the robbers who entered the office during the noon hour and stole approximately $4,000 from the safe. Police departments have been notified in all surrounding cities and a diligent search is being made.

Freight Car Collides With Paper Mill

[SPECIAL TO PAPER]

ZYLONITE, Mass., Oct. 12—A Boston and Albany freight car, which was being switched into the yard of the Berkshire Hills Paper Company last Tuesday afternoon, hit the side of the mill with such force that a big hole was torn in the brick wall, the impact sending the bricks flying in all directions, breaking a steam pipe and frightening a number of women who were working in the room. One woman fainted. The mishap resulted in the shutting down of the mill for a time until the broken steam pipe could be repaired. The freight car was smashed and the freight platform was demolished.

Middletown's Fall Festival

[SPECIAL TO PAPER]

DAYTON, O., Oct. 12—Chief interest in Middletown and that vicinity during the past week centered in the Fall Festival, which was held there and which attracted to that city many persons from other places. Delegations representing various commercial bodies from all parts of the State attended, and the affair was one of the most elaborate of its kind ever held.

Thomas Harvey, of the Gardner-Harvey Paper Company, was the grand marshal of the industrial parade, which was one of the chief features of the festival, and Colin Gardner, sr., president of the Colin Gardner Paper Company, was awarded first prize for having the most elegantly trimmed automobile in the floral parade on Saturday afternoon.

Perry Barker, fuel engineer, has opened offices and laboratories in the Oliver Building, 141 Milk street, Boston.

New Waterwheels and Generators Installed

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12—Engineer T. W. Orbison, of Appleton, is making two installations of waterwheels and generators in which much interest is being taken by manufacturers. One is at the new powerhouse of the Escanaba Traction Company, now nearing completion on the Escanaba river. This is the third power installation for this company that Mr. Orbison has put in, the waterpower developed aggregating about 10,000 horsepower. At this plant two units are being put in of vertical wheels with spiral casings, directly connected to umbrella-type generators. The power development is 3,600 horsepower. The other installation is at the mill of the Fox River Paper Company in Appleton, where two similar units are being put in, but aggregating only about a third as much horsepower. These installations are of the most modern and highest type, and their performance will be awaited with much interest.

Mill Notes from the Northwest

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 12—A fire resulting in only about $500 damage occurred, it is supposed from short circuit of electric wiring, in the laboratory of the Nekoosa-Edwards Co's mill at Nekoosa one night last week.

The Neenah Paper Company, has won the "Safety First" shield of the Kimberly-Clark Company industries for the best record of the year just past in the matter of freedom from accidents. The perecentage was 99.71.

Albert Kuehl lost three fingers of his left hand under a roll of paper at the mill of the Bergstrom Paper Company, Neenah, last week.

C. W. Spickerman, formerly connected with a Wisconsin river institution, but lately of New York, will return to this locality, as a paper salesman.

Guy C. Howard left Appleton last week for Montclair, N. J., where he has an eastern office, and where he will be busied for some weeks to come.

Items of Interest from Green Bay (Wis.)

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 12—George Schneider, vice president of the International Brotherhood of Papermakers, called at local mills Saturday, and announced he would go to San Francisco to attend the convention of the American Federation of Labor.

B. H. Mulcahy, son of the late John Mulcahy, salesman for the Albany Felt Company, of Albany, N. Y., has taken his father's territory in Wisconsin. He visited the paper trade in Green Bay Saturday. The young man has been a salesman for the Albany Company in another territory for several years.

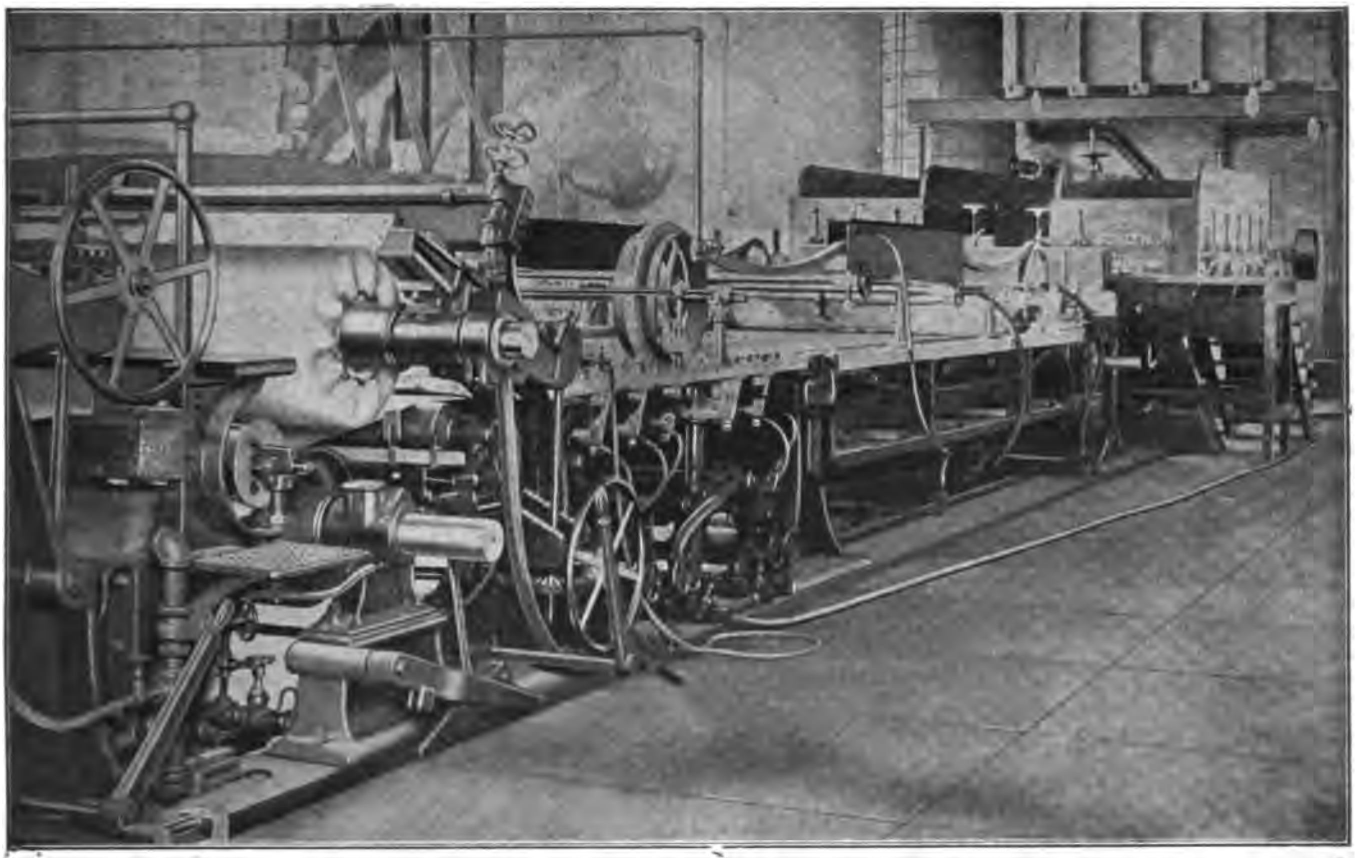
Alvin E. Hansen, manager of the Astor Paper Company, a paper jobbing house of this city, and Miss Alberta Denis, daughter of Paul Denis, will be married soon.

Suit for Alleged Infringement of Patent

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 12—There is a suit on the calendar of the United States District Court, which will probably be tried sometime after the court convenes October 18 at Auburn, with Judge George W. Ray on the bench, which is of interest to pulp and paper manufacturers throughout the country, who operate sulphite plants. The action is that of Paul C. Greene against the Newton Falls Paper Company, of this city. It is asserted that the local company has been infringing on the patent, which was granted to William F. McIntyre, of this city in 1905, and later transferred to Mr. Greene.

It is alleged in the complaint that the defendant has been infringing on it since August 29, 1905, and that since that time great profits have been made as a result of it. In his action Mr. Greene not only asks that the company be enjoined from using it further, but that it also be compelled to render an accounting and pay over a substantial amount for the use of the process all of this time. BLACK RIVER.



FOURDRINIER PART known as the "IDEAL" chiefly characterized by its construction in truss form, without legs or supports of any kind except at the ends.

Supported at one end by a link resting on bearings, and at the other end on a large ball and socket bearing.

It was an Ideal Fourdrinier machine (a 90-inch machine) which made the following record for the past year:

Kind of paper made - -	**Hanging**
Average run in tons per month -	**708**
Cost of wire per ton - -	**.259**

Send for Illustrated Descriptive Bulletin on the Ideal Fourdrinier

The Sandy Hill Iron & Brass Works
Hudson Falls, N. Y.

Tasmanian Woods Unsuitable for Pulp

PAPER has been favored by the director of the Forests Products Laboratory at Madison, Wis., with an excerpt from a Tasmanian newspaper, the *Weekly Courier*, issued at Launceston, regarding the prospects for developing a woodpulp industry in Australia. The following is a transcript of the *Courier's* comments:

WOODPULPING INDUSTRY

[*From Weekly Courier, Launceston, Tasmania, June 24, 1915*]

A deal of optimism has been dissipated by the report of Mr. Henry E. Surface, consulting engineer in forest products, Madison, Wis. (U. S. A.), on the possibilities of converting Tasmanian forest timbers into pulp for papermaking. The point of the expert's decision is that it is not a practicable scheme; in fact, our woods are not as suitable as some of our nonexpert enthusiasts have been proclaiming.

Mr. Surface examined myrtle (or beech), swamp gum, blue gum, and stringy bark, but found that their manufacture into pulp for sale would not be a feasible enterprise from the profit standpoint under the present or even under normal conditions. While the manufacture of the woods into pulp, and then into paper, could yield a profit under very favorable conditions, yet he could not consider it a sound industrial venture, and surely not an attractive one.

The main difficulty lay in the woods themselves. Their hardness, natural color, and comparatively short fiber confined their possible use to only one class of pulp, "soda pulp," with a limited usefulness for papermaking in general. The comparatively small yield of papermaking fibers that might be obtained from these woods meant a comparatively high cost of manufacture. He also stated that sawdust and indiscriminate sawmill waste were not suitable.

The report unfortunately is distinctly against the venture. At this there will be a general disappointment. All the high hopes that have been built up concerning a vast woodpulping industry in this State will now be laid aside, as this expert report may be said to have obliterated the prospect of any enterprise in this direction. The small samples of good paper that have been made from our woods were like the gold in some of our mines. The gold is there, but it does not pay to take it out.

Before joining the Australian Confederation the State of Tasmania was a separate British Crown Colony and in the early days was known as "Van Dieman's Land." Hobart, the capital, is distant from the southernmost cities of Australia about two or three days journey by fast steam packet. The island of Tasmania is about the size of Ireland, or of Portugal. It is noted for its wonderful forest wealth, which is still largely undeveloped, even though the inhabited part of the Colony was far advanced socially and industrially, long before the first settlements were made on our own West Coast. In certain worlds markets Tasmanian timbers are much prized for structural and ornamental work. For a number of years the Tasmanian Government has been considering the development of a woodpulp and paper industry to take advantage of its forests and waterpower resources and to supply the Australian market. Several resident and English engineers and analysts had reported rather favorably on the prospects and certain State-aided, as well as Government-owned, plants were lately in course of promotion. Before making several large appropriations of money and alienating public lands for these projects, the more conservative members of the Government wished to make sure of their attitude toward the proposed industry by securing an independent investigation and an absolutely unbiased report on the propositions.

Mr. Surface is an officer of the United States Department of Agriculture, Forest Service, stationed at its Forests Products Laboratory, a research institution maintained in cooperation with the University of Wisconsin, Madison, Wis. Taking leave of absence, he visited Tasmania in the winter of 1914-15, in response to that Government's invitation to report on its woodpulp and paper manufacturing propositions. This, of course, was with the approval of the State Department at Washington, since Tasmania is a foreign dependency.

American Writing Company's Dam Finished

[SPECIAL TO PAPER]

HOLYOKE, Mass., October 12—The American Writing Paper Company have finished the repairs to the dam at Mittineague on the Agawam river and better power will result. On the river are the Strathmore Paper Company, the Southworth Company, the Worthy Company and the Agawam division of the American Writing Paper Company. A number of the mills shut down for ten days during the time that the dam was undergoing repairs.

Envelope Company Adopts Shorter Hours

[SPECIAL TO PAPER]

WORCESTER, Mass., Oct. 12—The New England Envelope Company, of Worcester, has announced that beginning October 4 they will adopt the 48-hour a week schedule, the rates of pay being arranged so that there will be no reduction of the present wages. The change will affect about 100 hands. The mill had formerly been on the 54-hour a week schedule.

Paper Men Interested in New Loan Company

[SPECIAL TO PAPER]

HOLYOKE, Mass., Oct. 12—Arrangements are being made to organize a loan company on the Morris plan, which makes it possible for the workingman to secure a loan to tide him over when in need of financial help. A number of paper mill men are interested in the organization of the company, including Frank B. Towne, of the National Blank Book Company, and E. N. White, of White & Wyckoff.

George Corner died at his home on Maple street last week. Mr. Corner was an old papermaker. He was born in England eighty-five years ago and for a number of years after coming to this country was employed by the old Holyoke Paper Company.

New Work on South American Markets

A new publication has just been issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce, which should be of a high degree of interest to all who are giving attention to the problem of the extension of our trade abroad. It is entitled "Financial Developments in South American Countries," and reviews in about forty pages of a very clear and forcible style the situation as regards the currency, the money market, the principal banks, and the general condition of business in Argentina, Bolivia, Brazil, Chile, Peru, and Uruguay, during the last two or three years. Especial emphasis is placed on the results of the European war and the measures taken by the various governments, financial institutions, and commercial communities to meet the situation thus created. The book is to be had from the Superintendent of Documents, Government Printing Office, Washington, D. C., for the price of five cents.

A letter to the bureau of Foreign and Domestic Commerce states that a firm in France desires quotations on sulphurated muslin, and greaseproof paper. Samples of the paper desired accompany the letter and may be examined at the Bureau or its branch offices. (Refer to File No. 68.)

Classified ads in PAPER are the means of bringing competent paper workers in touch with employers, and employers having vacancies to fill are reminded to use classified ads. See page 50.

“TEST SPECIAL”

Rubber Belting

BEST
BELT

EVER
MADE

NEW YORK BELTING & PACKING COMPANY

New York, N. Y. - - 91-93 Chambers Street
Chicago, Ill. - - 124-126 West Lake Street
Philadelphia, Pa. - - 821-823 Arch Street
Pittsburgh, Pa. - - - 420 First Avenue
St. Louis, Mo. - 218-220 Chestnut Street
San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

From Canada

Laurentide Company's New President

[SPECIAL TO PAPER]

MONTREAL, October 12—At a meeting of the board of directors of the Laurentide Company, Inc., last Friday, George Chahoon, Jr., was elected president, Charles R. Hosmer vice president, and J. K. L. Ross a member of the board to fill the vacancy caused by the death of Sir William Van Horne. Ernest Alexander resigned as secretary of the company and W. P. Robinson was appointed in his stead.

THE LAURENTIDE WATERPOWER DEVELOPMENT

It is announced that a special meeting of the shareholders will be called before the close of the month to confirm the sale of the power and the creation of a new company, which will be known as the Laurentide Power Company, which will take over and operate the company's waterpower.

That there will be another "boom" in the power stocks, following this announcement, is to be expected, for the recent movement in these issues can hardly be regarded as having discounted the action decided upon by the directors, and it is not reasonable to suppose that the shareholders will not ratify the proposals.

Although the officials are reticent, declining to make any further statement as to the terms, etc., it is understood that the agreement is a favorable one both to the Laurentide and Shawinigan companies. The Laurentide Power Company will operate the waterpower at present operated by the Laurentide Company, Ltd., and the Laurentide Company will continue the business formerly carried on by the Laurentide Paper Company.

The power company will have 125,000 hp. to dispose of, and the Shawinigan Company is expected to take about 100,000 hp. The sale of this power will, of course, add very materially to the earnings of the Laurentide and help towards an increase of dividend which it is expected the company will declare in the near future.

The arrangement for the sale of the power to the Shawinigan Company is understood to be on most favorable terms to that company—terms that should make the stock almost as valuable as Laurentide. The company will have an extra 100,000 hp. to deal out, which under ordinary circumstances would mean a considerable increase in earnings.

Canada's Growing Trade in Pulp and Paper

[SPECIAL TO PAPER]

MONTREAL, October 12—The latest Government returns are emphatic evidence of the unprecedented trade for Canadian pulp and paper concerns. A year ago it was considered a commercial achievement for the Dominion that our paper exports had reached the million a month aggregate. Since the opening of the new fiscal year, on April 1, 1915, the United States alone has been taking well over a million dollars' worth, monthly, of Canadian newsprint. The July returns, the latest available, show that newsprint exports to the United States alone totalled $1,273,585. Canadian newsprint exports are nearing the million and a half per month mark. The July business aggregated $1,441,647. This brings the total business for the first four months of the current Government year to $5,098,779, of which the United States business alone accounted for $4,589,114.

This amount of export business in newsprint compares with a total of $4,213,134 ($2,175,945 to the United States) done in the same period a year ago. This year's business in four months is almost up to eight months' business in 1913, when the total was $6,918,177. It surpasses eight months' business of 1912, the aggregate, then, being $3,110,458.

While it is immediately clear that the United States is Canada's best customer, the "blue book" figures make it known that we are doing an important and a growing "within the Empire" trade. The war, of course, has had an immediate effect on our commerce, materially building up Empire business relations. In the first four months of 1914 England imported only $29,416 of our newsprint; this year our exports to England amounted to $63,220. Australian business increased from $197,408 to $211,303. Our "foreign" trade, however, fell off from $208,704 to $143,762.

The following table shows the exportation of newsprint paper for the first four months of the current fiscal year, and for eleven months of the previous fiscal year. The figures for March do not count, owing to the practice of the Government of including in that month shipments made during that month but not reported until the next month, which during the rest of the year are credited to the month in which they are reported.

Month	Chemical pulp	Mechanical pulp	News-print
1913			
April	$202,110	$143,126	$596,554
May	201,276	234,494	810,575
June	121,199	173,445	874,284
July	218,302	251,284	793,898
August	203,542	276,171	889,645
September	232,835	399,057	941,986
October	233,159	467,878	976,028
November	273,278	357,688	1,037,207
December	311,251	450,030	1,057,817
1914			
January	257,194	265,750	928,223
February	254,250	174,522	1,049,778
March	414,687	259,296	1,432,850
April	258,497	164,494	836,110
May	386,909	189,792	1,092,172
June	347,606	270,990	1,135,283
July	358,170	604,869	1,149,569
August	382,225	164,942	1,108,285
September	489,741	566,217	1,247,780
October	484,575	935,226	1,405,431
November	321,128	455,280	1,064,634
December	428,164	457,833	1,361,155
1915			
January	393,778	239,758	1,085,019
February	358,983	263,948	1,082,032
March (not reported yet)			
April	355,843	120,437	970,445
May	406,568	146,844	1,341,243
June	429,489	131,982	1,345,444
July	442,976	468,385	1,441,647
4 months new fiscal year	1,634,876	867,648	5,098,779

A New Sizing Process

Continued from page 20

one-fourth or at most a half of the usually needed quantity of alum or sulphate of alumina is necessary. Through the influence of the colloidal substances it is possible to obtain a thoroughly uniform, more or less finely granular or coarsely flocculent precipitation or decomposition of the size emulsion.

The introduction of gaseous acids, such for instance as sulphurous acid and carbonic acid, either alone or mixed with air in suitable proportion, has also proved advantageous, whereas the introduction of air alone is wasteful of time.

It is important in every case to prepare the colloid rosin emulsion of the desired alkalinity separately and not until then to add it to the pulp in the beating engine. It is then advisable to add to the material in the beater sufficient acid salts or acids, until a weak acid reaction results and the decomposition process is completed.

In addition to perfect sizing of every desired degree the process is said to effect a considerable saving in rosin and sulphate of alumina.

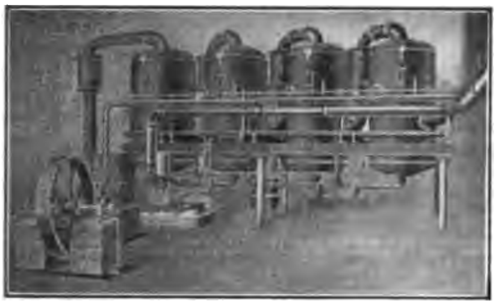
-W- Waterbury Felts and Jackets -W-

ARE MADE AT

1869 **ORISKANY, N. Y.** 1915

Waterbury Tight-Fitting Diamond -W- Jackets run safely, and will not lick up at any speed.

H. Waterbury & Sons Co., Oriskany, N. Y.



SCOTT'S IMPROVED RECOVERY SYSTEM FOR

SODA, SULPHATE & SULPHITE

Spent Liquors give the Maximum Economy and Efficiency

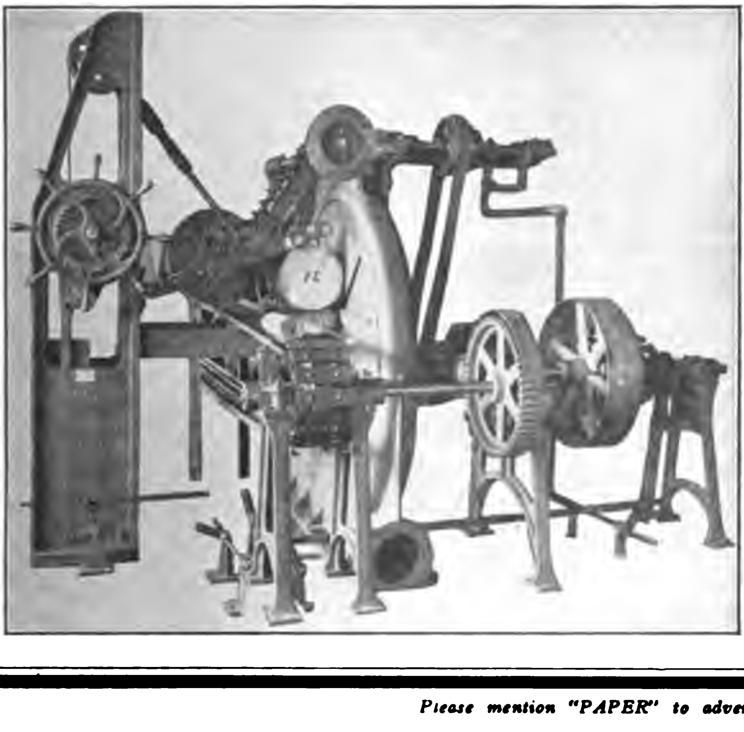
The PRINCIPLE, The DESIGN,
The CONSTRUCTION, The OPERATION,
The RESULT,

IS RIGHT

Complete installations made by "The Firm With The Experience"

ERNEST SCOTT & CO., Manufacturing Engineers
FALL RIVER, MASS.

The LeMoine & Schafer Barker Attachment Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today

The Appleton Machine Co.
APPLETON, WIS., U. S. A.

THE MARKETS

NEW YORK, October 12, 1915.

MECHANICAL PULP

The situation of the market is practically unchanged. Ample water supplies are keeping most of the mills equipped with grinding machinery, busily engaged in adding further supplies of groundwood to present fairly large stocks warehoused. It is estimated by some large distributors that the accumulation of supplies by newsprint mills is sufficient to meet their needs for a few months to come. Owing to these conditions trading throughout the week has been decidedly dull, and prices closed nominally steady at $15.75 to $16.50 f. o. b. plant as to quantity and terms of sale. In most quarters leading interests do not look for any improvement in trade conditions during the remainder of this year.

DOMESTIC AND FOREIGN CHEMICAL PULP

The expectations of importers that mills would be eventually forced to enter the market to replenish their stocks is being partly realized. Large consumers have apparently reached the conclusion that any decline in prices of the foreign product is very remote. This has been emphasized by numerous inquiries accompanied by bids on contracts for foreign pulp supplies at the quoted range of values. Owing to limited offerings, as a consequence of heavy buying for account of European mills, orders booked locally represented only moderate quantities. The high cost of the raw material abroad together with a further scarcity of supplies, and full prices being paid by Europe for chemical fibers, resulted in further advances by Scandinavian mills, representing gains of about 30 percent above normal quotations. As present conditions abroad are likely to continue for some time to come, domestic pulp manufacturers will be called upon to meet the requirements of mills. It is intimated in some quarters that stocks in the United States are far below normal and inadequate to relieve the situation.

Sulphite, foreign—		**Soda, domestic—**	
Bleached, ex-dock	**3.00 @ 3.10**	**bleached delivered**	**2.20 @ 2.30**
Unbleached, ex-dock	**1.95 @ 2.15**	**Scandinavian Kraft**	**1.90 @ 1.95**
Sulphite, domestic—			
Bleached, ex-dock	**2.70 @ 2.80**		
Unbleached, ex-dock	**2.00 @ 2.15**		

BAGGING, ROPE, ETC.

The volume of orders booked for both bagging and rope during the past week shows a gain over the corresponding period of the previous month, and this has created a firmer attitude on the part of leading dealers. Arrivals continue light and with stocks on the spot likely to be scarce, the tendency of the market is stronger and prices are moving upward. Some holders have withdrawn offerings of quoted inside range of values, while price shading on round lots is no longer noticeable.

Gunny, No. 1	**1.85 @ 1.90**	**Wool Tares, light**	**1.65 @ 1.75**
No. 1 Mill run	**1.45 @ 1.70**	**Wool Tares, heavy**	**1.60 @ 1.70**
Domestic	**1.60 @ 1.70**	**Foreign Manila rope**	**2.60 @ 2.65**
Light Burlap	**1.60 @ 1.75**	**Domestic Rope**	**2.75 @ 2.85**
Mixed Bagging	**1.00 @ 1.05**	**Mixed Rope**	**1.05 @ 1.10**
Sound Bagging	**1.20 @ 1.30**	**Flax Waste**	**3.45 @ 4.00**

IMPORTED RAGS

Although inquiries and sales show a slight increase for the week, business in the aggregate is far below normal for this time of the year. According to views of large distributors, general indications are for a gradual upward movement of values, based on limited spot supplies and decidedly small arrivals of rags from foreign sources of supply, and the likelihood of these ceasing entirely in the near future.

German Blue Cottons	**2.20 @ 2.25**	**German Linen Blues**	**3.45 @ 4.15**
Dutch Blues	**2.20 @ 2.30**	**German Linen, Gray**	**4.45 @ 5.28**
French Light Blues	**2.20 @ 2.45**	**German S. P. F.'s**	**3.45 @ 3.65**
New Light Prints	**3.70 @ 4.45**	**German Light Prints**	**1.95 @ 2.45**
New Mixed Prints	**2.95 @ 3.40**	**Dark Colored Cottons**	**1.10 @ 1.20**

DOMESTIC RAGS

Collections of rags show no improvement and with light arrivals from foreign sources the strength of the statistical position is daily becoming more pronounced. Notwithstanding prospects of a decided scarcity of supplies in the near future, paper mills still adhere to a hand-to-mouth policy in making purchases. Distributors and packers appear to have great confidence in the future course of the market, and predictions of sharp advances in price are being freely made by a number of prominent dealers.

New Shirt Cuttings, No. 1	**5.20 @ 5.40**	**No. 1 Whites**	**2.70 @ 3.20**
New Shirt Cuttings, No. 2	**3.45 @ 3.65**	**Soiled Whites, street**	**1.15 @ 1.25**
Fancy Shirt Cuttings	**3.30 @ 3.60**	**Soiled Whites, house**	**1.75 @ 1.90**
New Blue Cottons	**2.70 @ 3.15**	**Thirds and Blues**	**1.30 @ 1.40**
New Dark Cotton	**1.45 @ 1.70**	**Satinette Garments**	**1.10 @ 1.20**
New Unbld ctgs	**5.45 @ 6.00**	**No. 3 Satinettes**	**1.00 @ 1.05**
New Black Cottons	**1.70 @ 1.95**	**No. 4 Satinettes**	**.85 @ .90**
		No. 1 Tailor's Rags	**.70 @ .75**

TWINES

Unsettled conditions governing the market for twines and rope, owing to like reports from primary markets for the raw material, continue to exert an unsettling effect on business. Scarcity of freight room still limits the export movement to an appreciable extent. Quotations on both twines and rope closed wholly nominal but unchanged. Buyers as a rule are holding off awaiting further developments.

Sisal Hay	**8½ @ 9**	**Jute Twines, 36**	**11¼ @ 11¾**
Sisal Lath Yarn	**8 @ 8½**	**Jute Twines, 46&60**	**11¼ @ 11½**
Manila Rope	**12½ @ 13**	**Jute Twines, 4½&6**	**6¾ @ 7¼**
Manila Rope, No. 2	**11½ @ 12**	**Paper Maker's Twine**	**5½ @ 6**
Jute Rope	**6¾ @ 7¼**	**B. C. Hemp, 18**	**17 @ 17¼**
Jute Wrapping Twines— 2 to 6 ply—		**B. C. Hemp, 24**	**16½ @ 16¾**
No. 1	**10½ @ 11**	**B. C. Hemp, 36**	**16 @ 16½**
No. 2	**8½ @ 8¾**	**Amer. Hemp, 4½&6**	**14½ @ 15**
Jute Twines, 18	**12¼ @ 12½**		
Jute Twines, 24	**11¾ @ 12¼**		

OLD PAPERS

The demand for old papers is more active and prices covering most varieties show a firmer upward tendency. Inquiries for common papers and other inferior descriptions are larger and sales for the past week show a fair gain over those for the preceding week. The bulk of orders booked comprised mostly common, folded, cuttings, bogus and manilas of all varieties, while the better graded qualities covered a fair average volume of sales. Prospects for higher values appear more encouraging.

Continued on page 36

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Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

No. 1 Hard White Shavings	**2.35 @ 2.40**
No. 2 Hard White Shavings	**1.95 @ 2.00**
No. 1 Soft White Shavings	**1.60 @ 1.70**
No. 1 Colored Shavings	**.75 @ .85**
No. 2 Colored Shavings	**.55 @ .60**
Magazine Flat Stock	**.80 @ .85**
No. 1 Crumpled	**.65 @ .70**
Solid Ledger Stock	**1.70 @ 1.80**
Ledger Stock	**1.30 @ 1.45**
White Blank News	**1.00 @ 1.05**
Extra Manila Cuttings	**.85 @ .95**
New Manila	**1.25 @ 1.35**
No. 1 Manila	**.60 @ .70**
No. 2 Manila	**.30 @ .40**
Box Board Chips	**.25 @ .35**
Bogus and Mill Wrappers	**.40 @ .45**
Strictly Overissue News	**.45 @ .50**
No. 1 Mixed	**.27 @ 25**
Folded News	**.30 @ .40**
Common Papers	**.20 @ .25**

CHEMICALS

Scarcity of spot supplies and the continued advancing tendency of prices have served to stimulate an increased demand for the leading papermaking chemicals. Offerings of spot bleaching powder are light and selling prices are largely nominal, though 2½c and upwards is named as to terms of sales; manufacturers in most cases have booked their entire output and in some quarters makers are reported as being heavily oversold. Offerings of caustic soda parcels nearby afloat, and to arrive, are exceedingly light, owing to a scarcity of supplies; for export inquiries continue brisk with holders quoting 5⅜ and 5⅝c a pound on the basis 60 percent on the spot; contracts closed at 2½ to 2.65c for deliveries over 1916. Fair sales of caustic soda are being effected at 5⅞ to 6c for prompt delivery, while for 1916 deliveries sellers are naming 5 to 5⅝c, as to terms of sale. Sal Soda is in seasonable request and fair orders are being booked at .60c and upward for barrelled supplies, f. o. b. shipping point; spot lots of concentrated are selling at 1½c and upward, as to quantity ordered. Alum is scarce and in active request; sellers are quoting ammonia sorts at 3⅝ to 4⅛c for ground and at 5c to 5⅝c for powdered, while sulphate of alumina closed at 1⅞ to 1.55c as to grade and quantity ordered respectively. Brimstone is in steady demand at $22 to $22.50 a long ton, as to point of delivery. China clay is firmer on larger sales and prices closed at $8 and over and at $12 and above for domestic and imported, respectively, as to quality.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended October 9, 1915

WOODPULP

M. Gottesman & Son, str. Hellig Olav, Stockholm, 300 bs. (60 tons) dry sulphite.

J. Andersen & Co., by same, 1,750 bs. (350 tons) dry sulphite.

Perkins, Goodwin & Co., str. Westmount, Chicoutimi, 12,487 bs.

Scandinavian American Trading Co., str. Balto, Gothenburg, 3,000 bs. (600 tons) dry sulphite.

Brown Bros. & Co., by same, 600 bs. (120 tons) dry sulphite.

MISCELLANEOUS PAPER STOCK

Brown Bros. & Co., str. Nieuw Amsterdam, Rotterdam, 66 bs. paper stock.

E. Butterworth & Co., str Quebra, London, 93 bs. old rags, 96 bs. old bagging.

Stratford Oakum Co., str. Wells City, Bristol, 284 coils old rope.

W. O. Davey & Co., str. Bristol City, Swansea, 529 coils old rope.

L. H. Abenheim, str. Ile La Reunion, Marseilles, 75 bs. old bagging, 75 bs. old rope.

Marx Maier, by same, 95 bs. old rope, 75 bs. chiffons.

Brown Bros. & Co., by same, 397 coils old rope, 25 bs. cotton waste.

Gatti, McQuade & Co., by same, 21 bs. cotton waste.

A. Katzenstein, by same, 141 bs. cotton waste, 183 bs. old rope, 13 bs. cotton thread waste.

Baring Bros., & Co., by same, 140 bs. old rope.

Stratford Oakum Co., by same, 312 coils old rope.

Muller, Schall & Co., by same, 21 bs. cotton waste.

E. Butterworth & Co., str. Cairnhill, Havre, 219 bs. rags.

Marx Maier, by same, 131 bs. bagging.

Castle, Gottheil & Overton, by same, 330 bs. rags.

J. Liebman, by same, 15 bs. rags.

Muller, Schall & Co., by same, 387 bs. rags.

Salomon Bros. & Co., by same, 252 bs. old rags.

G. Amsinck & Co., by same, 538 bs. rags.

Salomon Bros. & Co., str. Noordam, Rotterdam, 86 bs. sound bagging.

Marx Maier, by same, 89 bs. dark cotton rags, 16 bs. clean, 214 bs. sound bagging.

A. Katzenstein, by same, 129 bs. cotton rags.

E. Butterworth, by same, 363 bs. bagging.

Castle, Gottheil & Overton, by same, 155 bs. paper stock.

Goldman, Sachs & Co., by same, 175 bs. bagging.

F. Salomon & Co., by same, 174 bs. old bagging.

John Hughes & Co., str. Cameronian, Glasgow, 145 bs. old cotton rags, 51 bs. bagging.

Irving Nat'l Bank, by same, 200 bs. paper stock.

CHEMICALS

Moore & Munger, str. Bristol City, Swansea, (quantity of china clay).

Continued on page 38

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Imports—Rags and Paper Stock

Continued from page 36

Arnold Hoffman & Co., str. Quebra, London, 172 csks. bleaching powder.

AT BALTIMORE

M. Gottesman & Son, str. Virginia, Stockholm, 600 bs. (125 tons) 400 bs. (60 tons) dry sulphite woodpulp.

M. Gottesman & Son, str. Florida, Stockholm, 300 bs. (60 tons) 500 bs. (125 tons) dry sulphite woodpulp.

AT BOSTON

Salomon Bros., & Co., str. Ile La Reunion, Marseilles, 52 bs. old bagging.

AT PHILADELPHIA

John Watts, str. Manchester Exchange, Manchester, 148 bs. cotton waste.

Schulz & Ruckgaber, by same, 246 bs. scrap bagging.

American Express Co., by same, 29 bs. paper stock.

A. M. Patterson, by same, 36 bs. wool waste.

Perkins, Goodwin & Co., by same, 92 bs. old bagging.

E. Butterworth & Co., by same, 267 bs. old bagging.

Louis Strauss, by same, 21 bs. rag cuttings.

M. Gottesman & Son, str. Florida, Stockholm, 600 bs. (125 tons) dry sulphite woodpulp.

In accordance with the postal laws and regulations, the following statement is published regarding the ownership, management, etc., of PAPER:

Statement of the ownership, management, etc., required by the act of August 24, 1912, of PAPER, published weekly at New York, N. Y., for October 1, 1915.

Name of editor, Thomas J. Keenan, post-office address, 117 East 24th street, New York; managing editor, Thomas J. Keenan, post-office address, 117 East 24th street, New York; business manager, Wm. B. Curtis, post-office address, 117 East 24th street, New York; publisher, Paper, Incorporated, post-office address, 117 East 24th street, New York.

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Paper, Incorporated, post-office address, 117 East 24th street, New York; Wm. B. Curtis, post-office address, 117 East 24th street, New York; E. E. Mansfield, post-office address, Niagara Falls, N. Y.; J. B. Potter, Woolworth Building, New York.

Known bondholders, mortgagees, and other security holders, holding 1 percent or more of total amount of bonds, mortgages, or other securities: (If there are none, so state.) None.

(Signed) THOMAS J. KEENAN, Editor.

Sworn to and subscribed before me this twenty-fifth day of September, 1915.

[Seal] CHARLES BISCHOFF,

Notary Public, N. Y. County, No. 443; Register's certificate, No. 7329
(My commission expires March 30th, 1917.)

Taking Stock of Growing Timber

The State College of Forestry at Syracuse has just completed a careful study of four hill counties in the southern part of the State. This study was made under the direction of Prof. Russell T. Gheen, of the extension service of the college, and four advanced forestry students. The four students worked on bicycles, visiting every woodlot of ten acres or more in the counties of Broome, Chemung, Otsego and a part of Delaware. The woodlots were mapped on geological survey maps and an estimate made of the timber. Besides supervising the work of the students, Professor Gheen made a study of local lumber markets and portable sawsmills in these counties. The purpose of these studies is to find out the exact proportion of forest and agricultural land and to determine the amount of timber standing and to stimulate the use of home-grown timber in lumber yards. A larger use of home-grown timber means more profit to the woodlot owners of the State. A stocktaking of the forest resource of the State similar to that which has been carried on during the past summer by the college is necessary in every county before the State can make definite and satisfactory plans for the fullest use of its forest and agricultural wealth.

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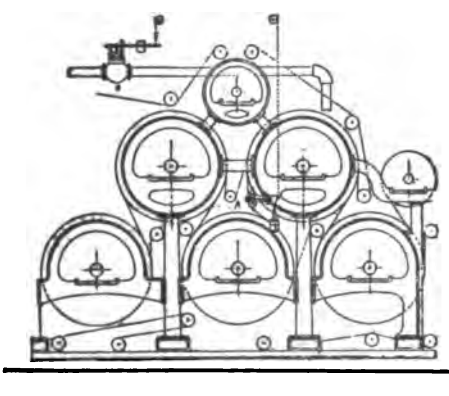

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Carey, James L., Chicago, Ill.
Ferguson, Hardy S., New York.
Field, William T., Watertown, N. Y.
Hardy, George F., New York.
Hungerford & Terry, Philadelphia, Pa.
Prather, H. B., Cleveland, O.
Smith, F. L., New York.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

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International Pulp Co., New York.

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Holyoke Machine Co., Holyoke, Mass.
Valley Iron Works Co., Appleton, Wis.

BEATERS

Dilts Machine Works, Inc., Fulton, N. Y.
Holyoke Machine Co., Holyoke, Mass.
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Valley Iron Works Co., Appleton, Wis.

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Oxford Paper Co., New York.
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General Electric Co., Schenectady, N. Y.

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Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co.. Hoosick Falls, N. Y.
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Black-Clawson Co., Hamilton, O.
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Eastwood Wire Mfg. Co., Belleville, N. J.
Improved Paper Machinery Co., Nashua, N. H.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

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Appleton Wire Works, Appleton, Wis.

DAMS AND RESERVOIRS
Field, William T., Watertown, N. Y

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Buchanan & Bolt Wire Co., Holyoke, Mass.
Cheney Bigelow Wire Wks., Springfield, Mass.

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Morey & Company, Boston, Mass.

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Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

DIGESTERS
International Process Co., New York.
Swenson Evaporator Co., Chicago, Ill.

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Preston's Digester Lining Co., Ltd., Radcliffe, England.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Snell, Samuel, Company, Holyoke, Mass.

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Fitchburg Duck Mills, Fitchburg. Mass.
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Buss, Edward A., Boston, Mass.
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Little, Arthur D., Boston, Mass.
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Smith, F. L., New York.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

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Morey & Co., Boston, Mass.
Orr Felt & Blanket Co., Piqua, O.
Shuler & Benninghofen, Hamilton, O.
Waterbury Felt Co., Skaneateles Falls, N. Y.

FILTERS
Hungerford & Terry, Inc., Philadelphia, Pa.
Norwood Eng. Co., Florence, Mass.
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Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES
Swenson Evaporator Co., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

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General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS
Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP
Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE
Fox Paper Company, Lockland, O.

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Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
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Field, William T., Watertown, N. Y.

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Black-Clawson Co., Hamilton, O.
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Bahr Bros. Mfg. Co., Marion, Ind.

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Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES
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L. & I. J. White Company, Buffalo, N. Y.

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LUMBER
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Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
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Fox Paper Company, Lockland, O.
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Castle, Gottheil & Overton, New York.
Heller & Merz, New York.
Morey & Company, Boston, Mass.
Parsons Trading Co., New York.

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Brown, L. L., Paper Co., Adams, Mass.
Cliff Paper Co., Niagara Falls, N. Y.
Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
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Westinghouse Machine Co., E. Pittsburgh, Pa.

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Hofeller Co., Theodore, Buffalo, N. Y.
Mendelson Bros. Paper Stock Co., Chicago, Ill.
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Perkins, B. F., & Son, Holyoke, Mass.

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Smith, S. Morgan, Co., York, Pa.

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Glens Falls Machine Works, Glens Falls, N. Y.

PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

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Black-Clawson Co., Hamilton, O.
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Glens Falls Machine Works, Glens Falls, N. Y.
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Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

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Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

Atterbury Bros., Inc., New York.
Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

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General Electric Co., Schenectady, N. Y.
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Pusey & Jones Co., Wilmington, Del.
Voith, J. M., New York.

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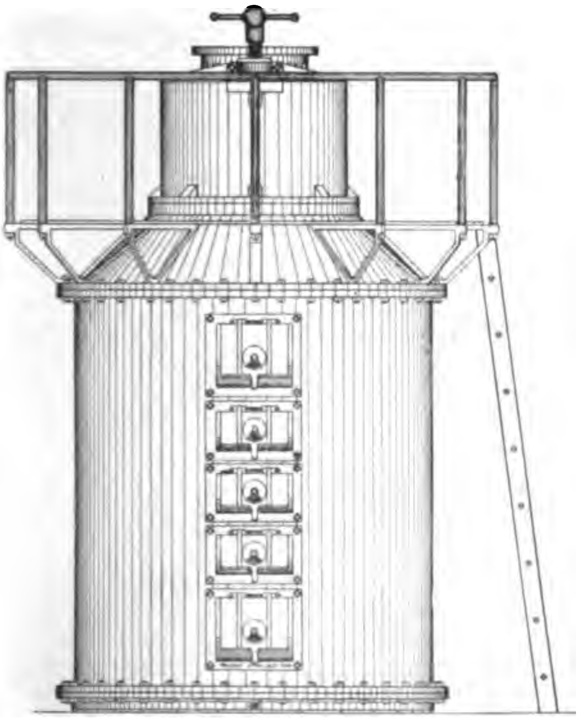

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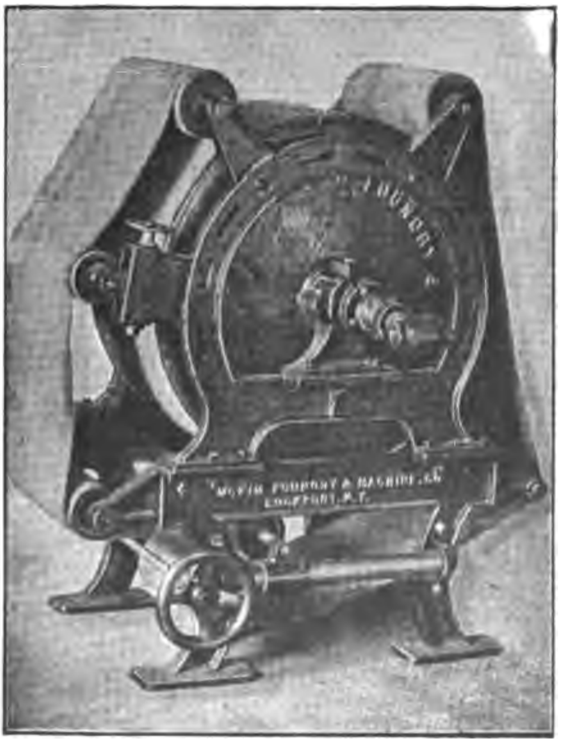

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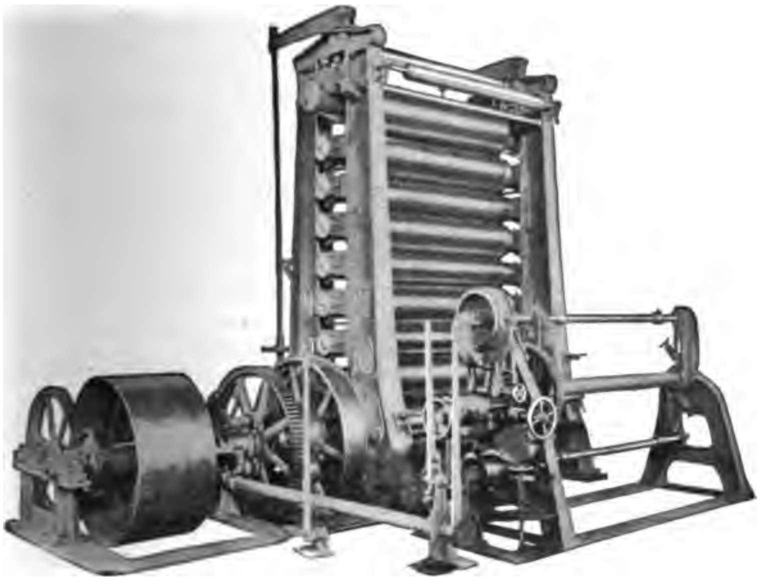

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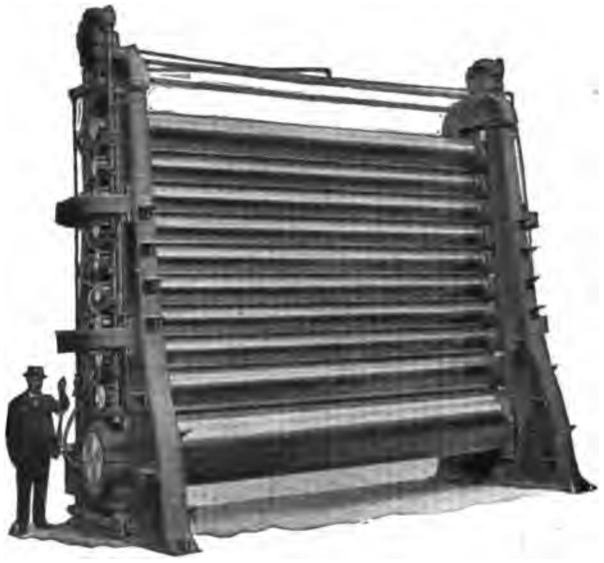

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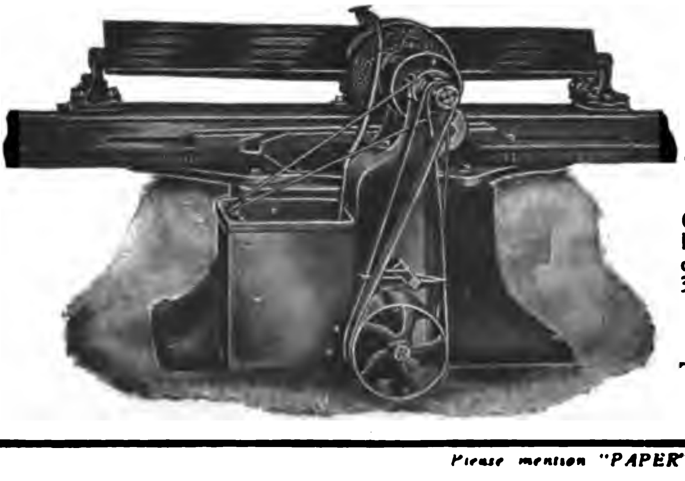

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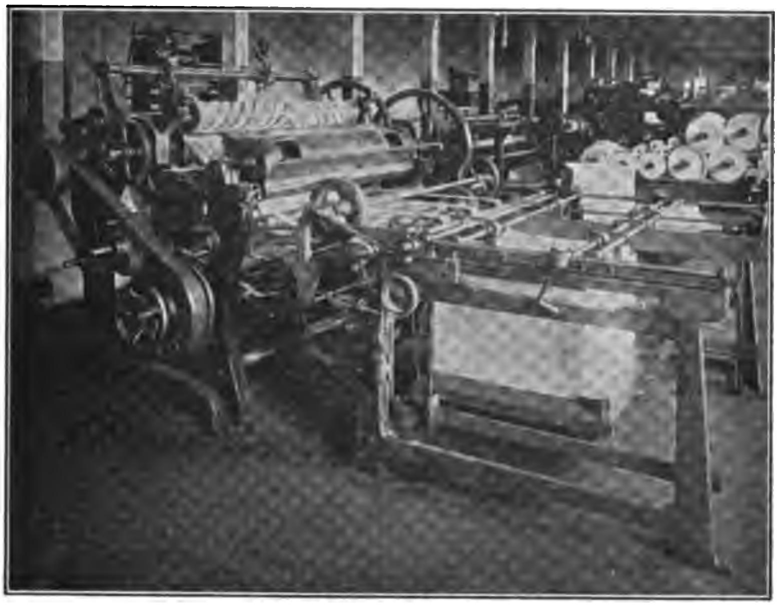

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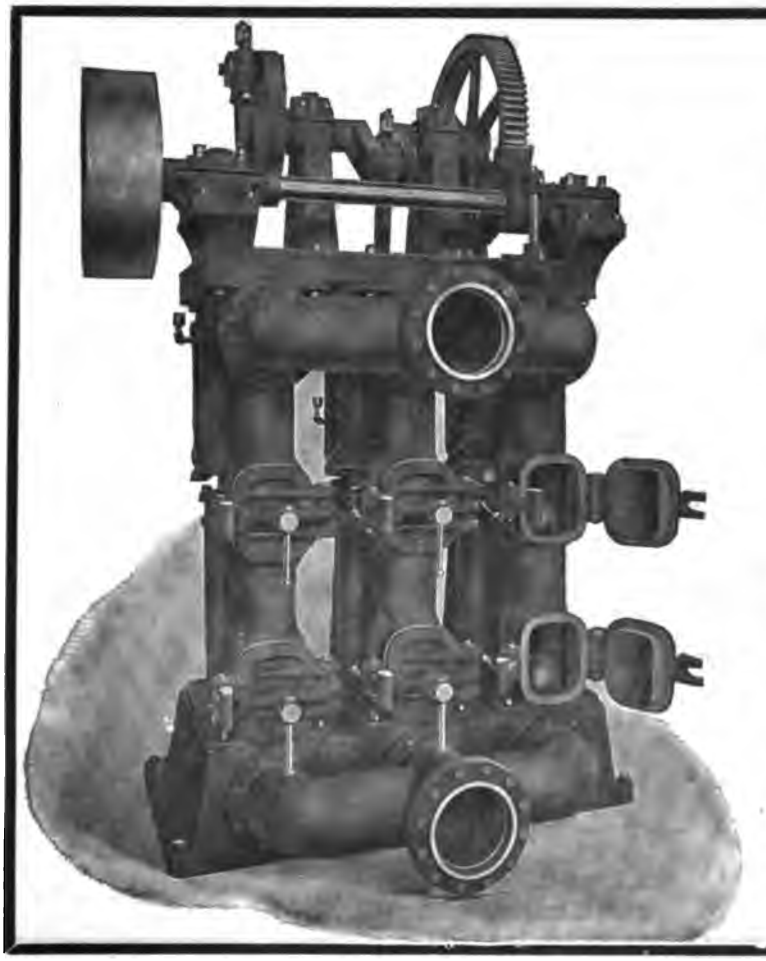

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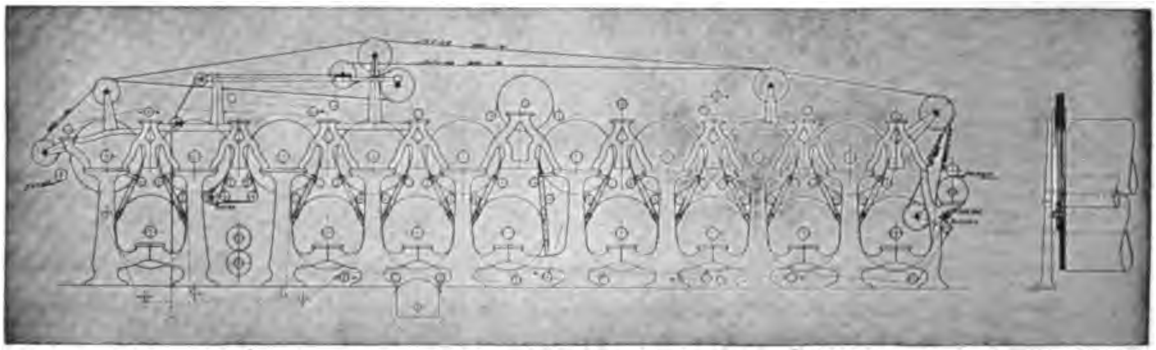

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Vol. XVII OCTOBER 20, 1915 No. 6

Electrolytic Bleach Plant Operation[1]

A Method of Balancing the Power and Fixed Charges in an Electrolytic Cell Plant

By FRANK G. WHEELER
Chemical Engineer, Kimberly-Clark Company, Neenah, Wis.

THE use of electrolytic bleach has become so general in connection with pulp mills, for the manufacture of the bleach at the mill, that a method of determining a very important point concerning the cells might be of interest. Many times cells are designated as having a certain current-carrying capacity, by which is meant that the cell gives good results when used with that current. We often hear of a cell as being a 500, or a 1,000-ampere cell, or even a 5,000-ampere cell.

It is well known that a cell of any size may be made to carry more or less current at the discretion of the operator. The quantity of bleach required in a pulp mill is varied by this method; if more bleach is needed the current is increased, and *vice versa.* However, the more current used per cell, the higher the voltage required per cell, and the more power used per ton of bleach made. The question arises whether it is better to use more cells and carry less current, or install fewer cells and carry more current. To show the point at which the fixed chages balances the cost for power is the subject of this paper.

The fixed charges is the sum of the cell depreciation, the building depreciation, the attendance, the repairs, and the taxes, insurance, etc. It is readily seen that the total amount of these per annum is about the same, so that the greater the tonnage a given plant can be made to produce, the less do these costs per ton become. If the plant makes no bleach, the cost per ton is infinite, while if the plant makes an infinite amount of bleach the cost per ton is zero. Intermediate amounts are inversely proportional. If these are plotted on coordinate paper, it forms an hyperbola with the axes as asymptotes.

The power costs are dependent upon the cost of the unit of power itself, and the resistance of the cell. From the heat of combination, it is figured that it takes 2.29 volts to break the sodium chloride to caustic soda and chlorine, without overcoming any resistance. The voltage required to operate a cell increases proportionately above this with the increase in the current. Since the power used is equal to the voltage of the cell multiplied by the current, it follows that the cost to operate a cell increases with the current used, and with a fixed resistance of the cell, the cost of power increases per ton of product.

The production of a cell can be made a function of the current. In other words, the bleach produced per day in pounds equals the product of the current, the current efficiency and the constant 0.2.

If the current efficiency is considered constant, the cost per ton for the power can then be made a function of the current, instead of the production, because the production and the current are proportional.

Similarly, the fixed charges are inversely proportional to the current.

The next step is to plot the fixed charges and the power costs as functions of the current. This is shown for a cell, in Fig. 1, the costs and efficiency of which are outlined in the diagram. It is seen that the fixed charges decrease with the increase of production or of the current, which is proportional to the production. Similarly the power charges increase with the current. It is also seen that the power-cost line increases more rapidly the higher the resistance of the cell.

The sum of these two lines gives another hyperbola the asymptotes of which are the ordinate and the power-cost line. This latter curve has a minimum point, at which current, or production, the cell has a lower cost per ton than for any other value. It is therefore cheaper per ton of bleach to install a cell plant when using a cell of the given cost and efficiency,

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[1] Read before the Technical Section of the American Paper and Pulp Association at the meeting in Grand Central Palace, September 23, 1915.

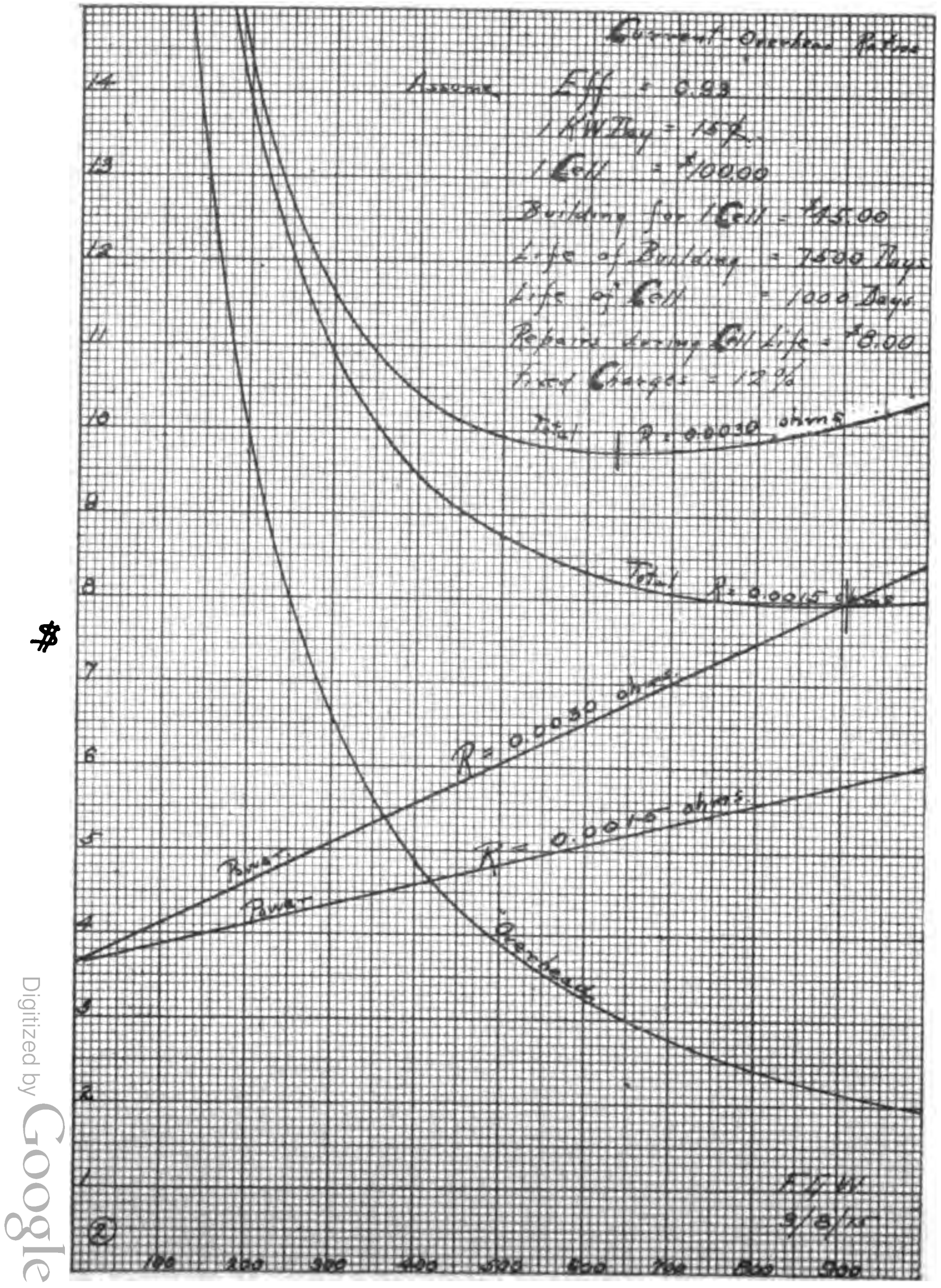
Current-Overhead Ratios
Assume Eff = 0.93
1 KW Day = 15¢
1 Cell = $100.00
Building for 1 Cell = $45.00
Life of Building = 7500 Days
Life of Cell = 1000 Days
Repairs during Cell Life = $8.00
Fixed Charges = 12%
Total R = 0.0030 ohms
Total R = 0.0015 ohms
R = 0.0030 ohms
R = 0.0015 ohms
Power
Power
Overhead
$
14
13
12
11
10
9
8
7
6
5
4
3
2
1
②
100
200
300
400
500
600
700
800
900
F.G.W.
9/8/15

FIG. 1

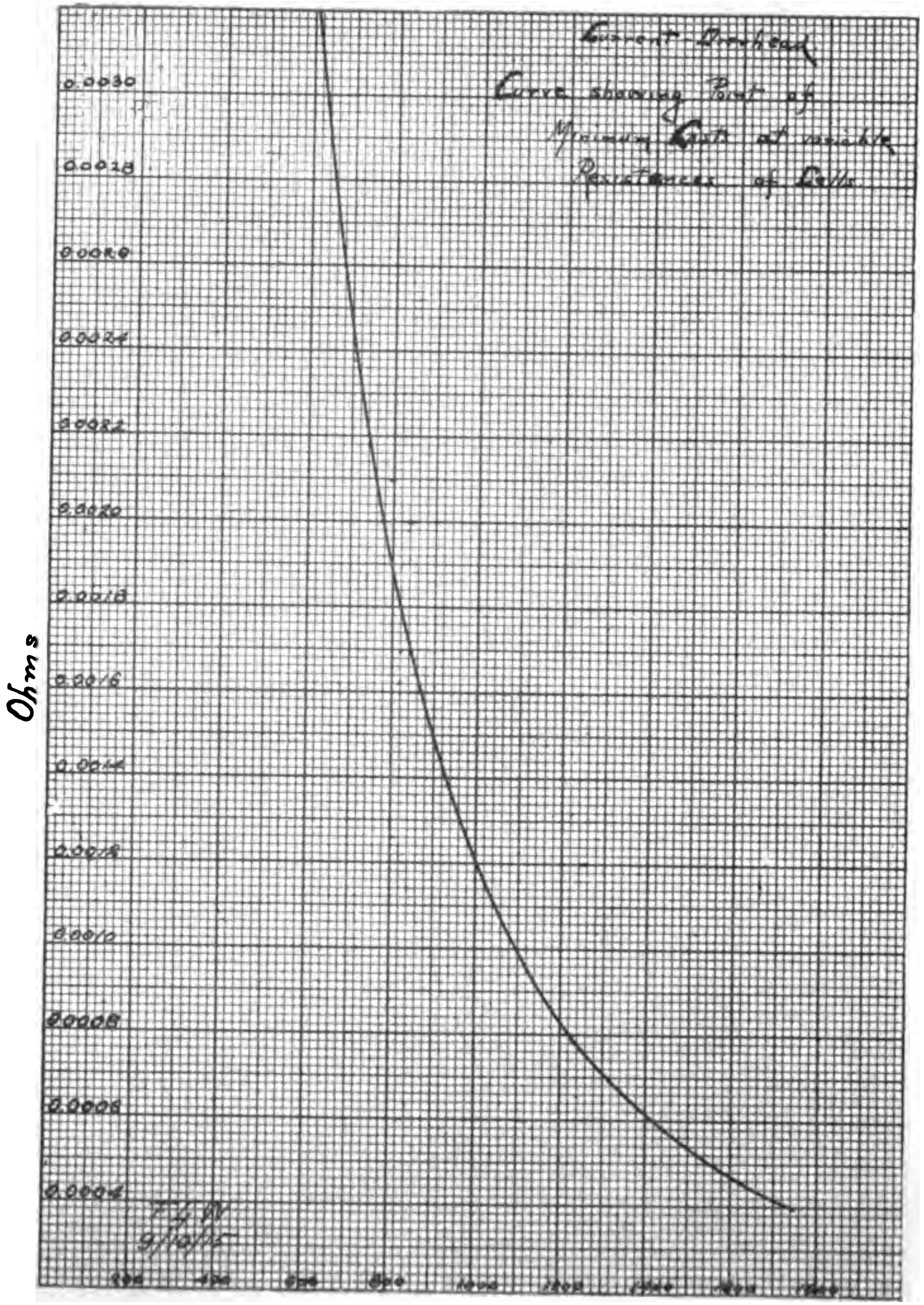
Current-Overhead
Curve showing Point of Minimum Costs at variable Resistances of Cells
Ohms
0.0030
0.0028
0.0026
0.0024
0.0022
0.0020
0.0018
0.0016
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
200
400
600
800
1000
1200
1400
1600
1800
F.G.W.
9/10/15

FIG. 2

to operate at an average of the current shown on the curve than for any other value.

Applications of this principle can be varied to suit all conditions. If a man is about to install a new cell plant, two cells may be compared by drawing the two curves on the same sheet. Thus a mercury cell and a diaphragm cell may be compared, or two cells of the same type. The designer can compare two different models. The operator can decide whether his plant is at its best by laying out a curve showing the minimum point in bleach cost. Since the cells vary in their resistance, a set of curves may be plotted, with different resistances. A line passing through all of the minimum points can then be drawn as is shown in Fig. 2. This last curve is laid down out from the same cost curves as is shown in Fig. 1, and represents the points of minimum cost at all of the different resistances, so that as the resistance of a cell increases, the current carried should be lower.

In this way, the buyer, the designer, or the operator can work out the best point of operation for his cell, or he can reverse the operation and find the best sized cell to operate under his own conditions.

To summarize: The method of computing the best operating current to use in an electrolytic cell is to make the fixed or overhead charges and also the power costs functions of the current, and then plotting them to find the current corresponding to the minimum cost per ton of bleach.

Papyrus and Paper Manufacture

By Dr. WILLIAM BEAM, F. I. C.

Research Chemist, Wellcome Tropical Research Laboratories, Khartoum, Sudan

THE reed known as papyrus, *Cyperus papyrus*, was, as is well known, the source of one of the earliest forms of paper. The process of manufacture was quite simple. The outer fibrous layers of the stem were separated by means of a sharp tool and the strips so secured were spread out parallel to each other on a flat surface, moistened with a little gum water and covered with similar material laid crosswise. After pressing and drying the sheets were polished by rubbing with a smooth piece of stone or ivory.

In recent years papyrus has attracted considerable attention as a possible source of paper by modern methods of production. The success of such an undertaking is dependent upon a number of factors, chief among which are the extent of the supply of raw material, the cost of its collection and transport to the point of manufacture and the quality of the paper produced.

SUPPLY OF RAW MATERIAL

In forming an opinion as to the sufficiency of supply of any new material for papermaking, it is fully realized that very large quantities are required by even a single mill of average capacity and that once a given material has been adopted for the purpose, the supply must be maintained without break or check.

In the Sudan, papyrus is found in isolated patches at various points on the White Nile south of Khartoum. These patches are derived from the small islands of "sudd" detached from the main growth in the Upper Nile and carried down by the current, especially during the season of flood. As one proceeds south it begins to be found in much greater quantity a short distance below Lake No, about 986 kilometers from Khartoum. From this point it extends south on the Bahr el Gebel to Abu Kika, about 1,496 kilometers from Khartoum and covers in many places an area of a kilometer or more in width on one or both sides of the river.

When it is realized that even though the whole of this enormous amount of material were collected it would be entirely renewed at the end of a year, there appears to be little danger of failure of any papermaking enterprise due to lack of raw material. It is true that, especially towards the end of a dry season, a certain amount is annually destroyed by fires; but once the work of collection is seriously undertaken, this loss could be minimized by taking the precaution to make the earlier cuttings in such a way that the denuded areas serve as fire lines and thus afford at least some measure of protection to the remainder.

THE QUALITY OF PAPER PRODUCED

The experimental production of crude and bleached pulp was carried out in this laboratory in 1908. As far as could be determined by trials on a small scale the results appeared promising. The yield of crude pulp obtained, calculated on the dry stems, was approximately 33 percent, and a noteworthy feature was the ease with which this was bleached by hypochlorite. A sample of the stalks sent to the Imperial Institute for comparison with esparto grass was reported on the same effect, and the dried stems were valued at about £3 [$15] per ton, delivered in England. Trials on a more complete and larger scale were carried out for the "Sudd Fuel (Suddite)" Company by Messrs. Tulliss, Russell and Co., and by Messrs. Thomas and Green, under the auspices of Messrs. Cross and Bevan. These indicated on the whole a valuation about equal to esparto and special very promising features were noted. It was found, *e.g.*, that the pulp could be used as an "entire furnish," *i.e.*, without admixture of wood or other long fiber. The color was also approximately up to the standard of ordinary bleached supply. These and other results "establish very important points of all round utility as a papermaking fiber, combining many of the advantages of esparto, wood and rag; and the fiber would work in, in all grades of paper, as a useful auxiliary in any case. It has also been shown by results that the *entire paper* is of satisfactory quality and when fully studied as an entire furnish will give some rather exceptional qualities of paper."

From the earliest results of investigations of this subject in these laboratories, it was evident that the success of any venture in the direction of the commercial utilization of papyrus for papermaking, was de-

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Editor's Note—For this interesting contribution to the literature of papermaking we are indebted to the director of the Wellcome Tropical Research Laboratories, Gordon Memorial College, Khartoum, Sudan. It was published as *Chemical Section Bulletin No. 2*, March, 1915, and is reproduced here in its entirety.

pendent upon the ability to lessen the cost of transport by manufacturing, in the Sudan, and preferably in the sudd region, some form of concentrated material or "halfstuff." This view has received support from the reports of the Imperial Institute and of Messrs. Cross and Bevan, in both of which attention is called to the desirability of directing the operations in the Sudan to that end. As already noted the raw material in the shape of air-dried stalks is valued at about £3 per ton at which figure profitable exportation would hardly be possible.

In their report, referred to above, Messrs. Cross and Bevan have suggested the possibility of appreciating the yield of papermaking fiber by crushing cut reeds in order to separate the juice and possibly, also, a certain amount of the useless cellular matter. This, however, had already been tried with little success. A more promising method appeared to be by steeping in water, with or without access of air. It was hoped that by such a process of "retting," the plant might be so broken down as to permit of the removal of the whole or greater part of the cellular matter by mechanical treatment. Very many trials were made, in some cases with addition of ferments, but the only portion of the plant which yielded to the treatment was that quite close to the base of the stalk—the first six or eight inches. In some of the experiments the plants were submerged for more than two months without appreciable effect. These results were in keeping with the observations made on stalks found floating, in a decomposed state, in the river. In no case was there any evidence of selective action, the plant yielding to the fermentative processes more or less as a whole.

The production of crude pulp or halfstuff was next attempted by simple, open, boiling with caustic soda. Using the fresh, green, material it was found that, except in the case of young plants, this could be effected only with difficulty, the lower more dense portion of the stems being very resistant. Much better results were had by operating on the previously dried material, obviously for the reason that penetration by the caustic liquor was more rapid and complete. Two hours boiling sufficed for complete disintegration in this case, whereas the lower portions of the green stems were still practically unaffected after eight to ten hours treatment, in the same strength of caustic liquor. Experiments in this direction have, however, been suspended as unpromising under present conditions. The great cost of caustic soda in so remote a region and the lack of suitable limestone in the neighborhood for its revivification, makes its application desirable only as a last resort. A method of manufacturing the concentrated material without the use of chemicals is obviously what is required, and a number of experiments in this direction resulted in the development of the following procedure which gives good results on the small scale and appears capable of application on a manufacturing one by the use of suitable mechanical contrivances.

If the papyrus stems, either green or dry, be treated with water under pressure to a temperature of from 142° Cent. to 150° Cent. for from three to six hours, and then removed and beaten in a stream of water, practically the whole of the soluble and cellular matter may be removed, the fibrovascular bundles chiefly remaining. The fiber so obtained is darker in proportion as the digestion has been carried out at a higher temperature, but even the darkest specimens have yielded a perfectly white pulp on subsequent treatment with caustic soda and bleach in the usual manner.

The advantages of a method of this kind are very great. Not only are no chemicals required but there are no difficulties as regards the disposal of waste products, a serious matter when working on the large scale which is essential to the success of any project of this nature.

The following yields were had, the material employed being the air-dried stems containing, roughly, 8 percent of moisture.

(a) Digested at 142° Cent. for six hours.
Yield of dry halfstuff=40.5 percent.
On further treatment with caustic soda and bleach, this yielded 55.2 percent of bleached pulp.

(b) Digested at 150° Cent. for three hours.
Yield of dry halfstuff=37.5 percent.
On further treatment with caustic soda and bleach, this yielded 54.8 percent of dry bleached pulp.

It is estimated that halfstuff similar to the above would have a value of not less than £5 [$25] per ton. Allowing, say £2 [$10] for transport from the sudd region to Europe, this leaves £3 [$15] for the collection and manufacture, a figure which would appear to permit of a fair margin of profit. More exact figures could only, of course, be given after trials upon a larger scale.

Proposed Standard for Kaolin

THE Committee on Unofficial Standards of the American Pharmaceutical Association has formulated the subjoined description of kaolin or china clay for inclusion in the National Formulary. Any criticism or comment on the proposed standard for kaolin should be addressed to George M. Beringer, chairman of the committee, 501 Federal Street, Camden, N. J.

KAOLIN

A native hydrated aluminum silicate, powdered and freed from gritty particles by elutriation.

A soft, white or yellowish-white powder, or in lumps, having an earthy or claylike taste; insoluble in water, and in cold dilute acids and solutions of the alkali hydroxides.

When moistened with water, kaolin assumes a darker color and develops a marked claylike odor.

If 1 Gm. of kaolin be mixed with 10 mils [a mil is a cubic centimeter] of water and 5 mils of sulphuric acid, no efferescence should occur, and if the mixture be evaporated until the excess of water has been removed, and further heated until dense white fumes of sulphuric acid anhydride appear, then cooled and 20 mils of water added and boiled for a few minutes and filtered, there should remain on the filter a gray insoluble residue of *impure silica.*

If to a half of the above filtrate ammonia water be added, a gelatinous precipitate of ***aluminum hydroxide,*** insoluble in excess, should be obtained.

If to the remaining half of this filtrate, sodium hydroxide, test solution, be added, it should yield a gelatinous precipitate which is almost or completely soluble in an excess of the reagent.

If 2 Gm. of kaolin be rubbed in a mortar with 10 mils of water, the mixture should not acquire more than a slight reddish tint on the addition of 0.05 Gm. of sodium salicylate (absence of more than traces of ***iron***).

If kaolin be ignited at a red heat, it should leave not less than 85 percent of nonvolatile residue.

New Form of Magazine Wood Grinder

Provision is Made for Guiding the Logs to the Grinding Box

OF what are known as automatic grinding apparatus, or magazine grinders, there are, as is well known, several forms of construction. In the best known and really the only one that has found practical employment, two grinding boxes are arranged, into which the logs quickly drop and fill the box when the previous supply is ground up. Under hydraulic pressure the ram again moves forward and forces the blocks of wood against the stone. The logs slide down from the stationary magazine located above the boxes and the stones. A full account of the operation of this type of magazine grinder was published in Paper for June 25, 1913.

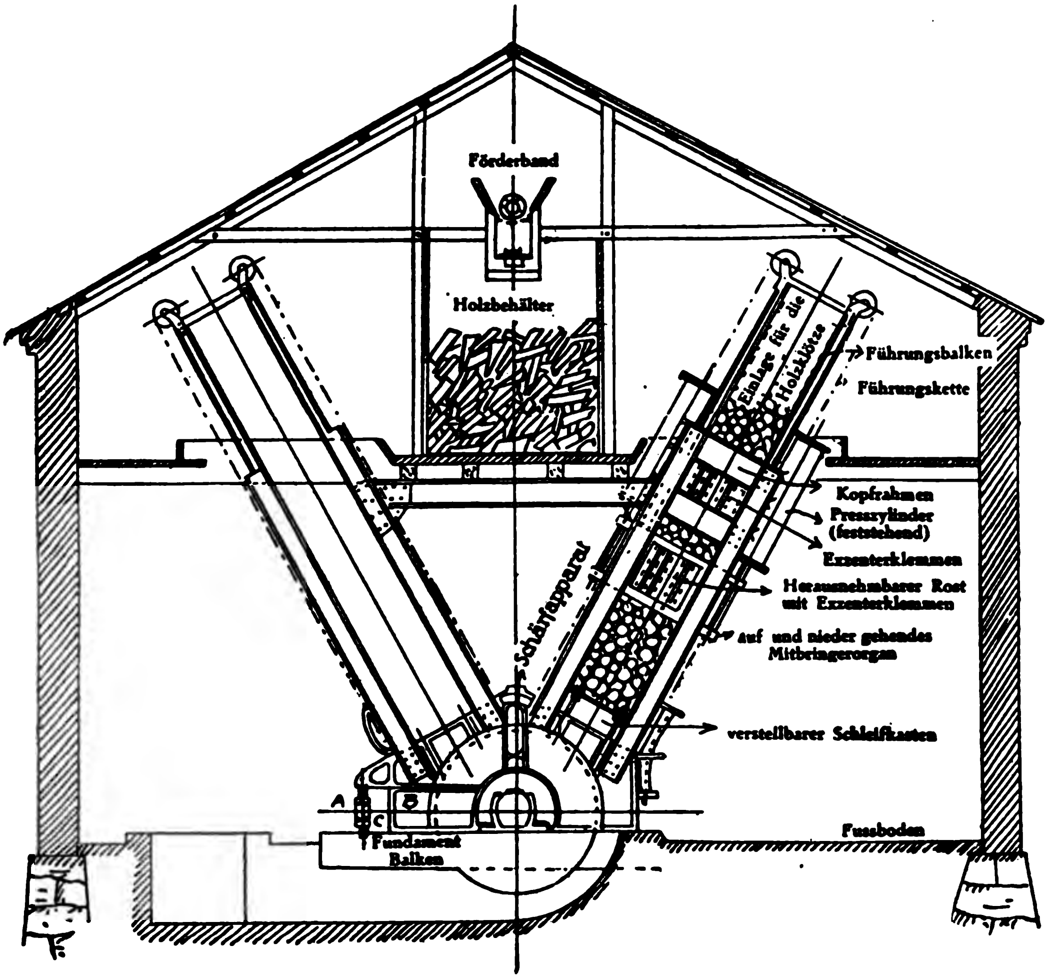
Förderband
Holzbehälter
Einlage für die Holzklötze
Führungsbalken
Führungskette
Kopfrahmen
Presszylinder (feststehend)
Exzenterklemmen
Herausnehmbarer Rost mit Exzenterklemmen
auf und nieder gehendes Mitbringerorgan
verstellbarer Schleifkasten
Schleifapparat
A
B
C
Fundament Balken
Fussboden

FIG. 1—ELEVATION AND PLAN OF NEW MAGAZINE GRINDER

In spite of the mechanical perfection attained in this apparatus, the nature of the system and construction is such that the log is subject to no grinding guidance from the time it is placed in the magazine until it is pressed against the stone, and consequently, though perhaps not readily, says P. Chr. Schanning, in *Papierfabrikant,* is sometimes displaced and as a result catches fast or lies crosswise, so that the box is not filled. Where this occurs the ram or piston is released and passes back through the empty chamber, until the trouble is remedied and the logs are placed in order.

In the accompanying illustrations, Figs. 1 to 3 show a new apparatus, patented by Schanning & Wahlström, which Mr. Schanning asserts requires smaller floor space than the ordinary grinding apparatus and very much less than the magazine grinders previously referred to. It is best to construct the apparatus with five boxes and the logs are piled, in each case to the extent of about a cubic yard, in the receiver on the upper floor. The logs form, in each box, what may be termed a continuous column, extending from the stone to the inlet. This column is supported by two pieces of *T* iron, placed at each side, the lower end being firmly attached to the grinding box and supported at the top on each side. In order that the logs may not, under the heavy pressure, press too hard against these guides, an endless chain is arranged against them, the side of which, facing the carrier, can be lubricated and which takes up the pressure of the logs against the guides. The chains run over pulleys attached below to the grinding box and above to the head of the carrier. The pressing cylinders are cast on or mounted on a square crown frame, supported by strong *U* irons which are attached to the supporting seat of the apparatus. Between these and the crown frame and guided by the *U* irons, runs what is known as the forwarding device, which is moved up and down by the ram plunger rod.

The forwarding device is a simple frame of cast steel which encloses the column of logs.

In each of the two opposite side walls that face the ends of the logs a large square opening is contrived, in which a removable grating is placed, in which again, a large number of forwarders or excentric clamps are mounted.

These are so constructed that their teeth release the logs when they are moved ahead by the forwarding device in the direction of the stone, but which clamp firmly into the logs when they are forced against the stone. As a large number of such clamps are provided, there are always enough of them clamped tight and the pressure is thus distributed among so many clamps that the strain on each one is comparatively small.

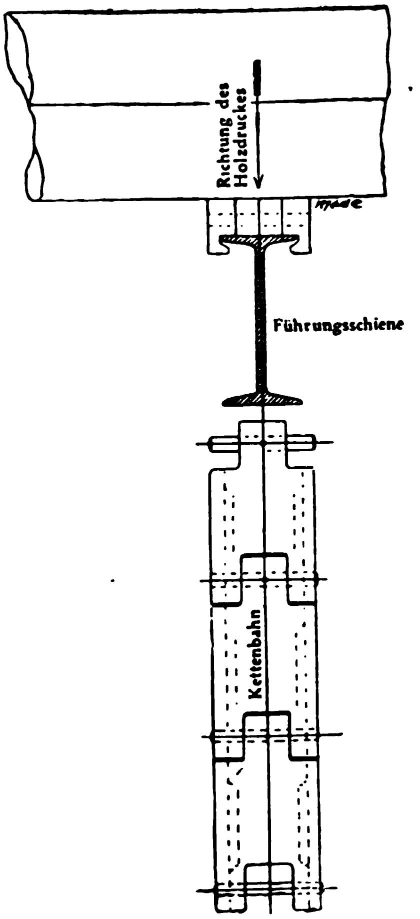

FIG. 2

If, through any cause, one of the forwarders should become jammed between two logs which may supposedly be caused, so that the movement of the forwarding device from the stone should fail to bring the forwarder with it, it will seek to raise the log column above the location of the difficulty, consequently to divide the column. To prevent this there are also placed in the head frame a number of excentric clamps, which, on the logs moving upwards, at once arrest this movement.

A selfevident advantage in this apparatus is that from the time the log is laid in the receiving frame, until it is ground, it is at no point left to itself, but always has a compelling guidance. By this means, and experienced grinders will know how to appreciate it, the advantage is gained that the log is placed properly in the press box, that is to say, it passes sidewise as little as possible. It is well known that even with the short boxes of the ordinary apparatus, in which there is not room for many logs, a box not properly filled does not grind.

There is nothing to prevent, in the automatic apparatus, the use of the same method for inserting the logs as is used in the ordinary apparatus. The changing of the stone is effected by unscrewing the piece *B* from the seating, the pressure relief screw being for this purpose first screwed up until practically no pressure rests on the stone. The shaft, with the stone is then removed from its bearings and rolled away so that the shaft is caused to lie in the interspace *C*. The piece *B* is then returned to its place, the screw *A* removed and the stone is released. The same course is pursued when a new stone is to be installed. The stone with its shaft is brought into the space *C*, the pressure relief screw is tightened and the piece *B* removed and the stone placed in its bearings. The piece *B* is returned to its place and the pressure relief screw removed.

If it should happen that the grinding box must be emptied it is not necessary for this purpose to empty the whole magazine. By a most ingenious arrangement, the entire column of logs can be raised with the forwarding device from the stone and the few logs remaining in the box removed by hand. Then the entire column of logs is let down again.

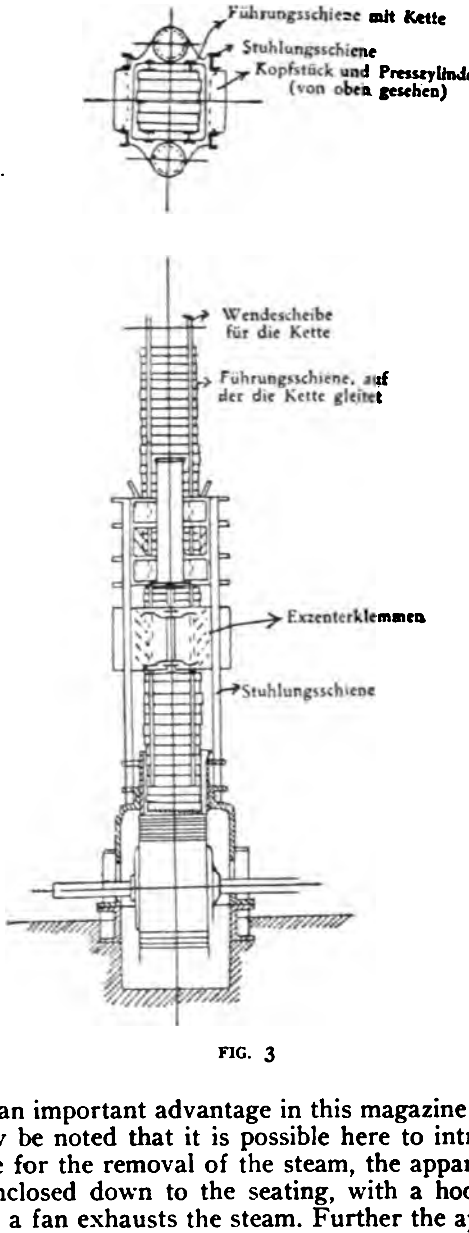
Führungsschiene mit Kette
Stuhlungsschiene
Kopfstück und Presszylinder (von oben gesehen)
Wendescheibe für die Kette
Führungsschiene, auf der die Kette gleitet
Exzenterklemmen
Stuhlungsschiene

FIG. 3

As an important advantage in this magazine grinder, it may be noted that it is possible here to introduce a device for the removal of the steam, the apparatus being enclosed down to the seating, with a hood, from which a fan exhausts the steam. Further the apparatus possesses the great advantage that the important parts are so far removed from the stone, that in the event of the stone bursting, only the press box can be broken. In other known forms of construction, the cylinders too, are broken, because they are attached to the grinding box.

The editor of *Papir-Journalen* adds the following:

Exhaustive experiments with this apparatus are projected in the Vittingfos mill and we shall keep our readers informed as to the result of these tests. There exists no doubt that the apparatus merits the attention of mechanical pulp manufacturers, because, in all probability it will insure an increase in production with the horsepower now available and in the case of large plants especially, will materially reduce labor.

A very important advantage in the apparatus is the control that is obtained of the consumption of wood in relation to the output. A counter can be applied to the chains that will record the number of meters that have been moved by the stack. For each stack can then be determined how many meters of log column each apparatus has ground in a predetermined period. Each meter represents a certain number of cubic feet and by this means we obtain a check and oversight of the consumption of wood in proportion to output.

New Cellulose Cooking Process

IN a patent issued by the United States Patent Office September 14, 1915, to B. M. E. L. Possanner von Ehrenthal, of Cöthen, Germany, a new method of producing cellulose and related products is described. In an introductory paragraph to the complete specifications it is set forth that there are quite a series of vegetable fibers, which contain good fibers suitable for making paper, which, however, on account of the chemical construction are very difficult to be opened out and which heretofore could not be turned into bleachable cellulose in an economical manner. The reason of this is to be found in the chemical composition of these fibers so difficult to be opened out differing from the common raw cellulose material, such fibers containing usually larger amounts of low carbohydrates easily hydrogenized, moreover pectin substances and hemicelluloses and so on, which are all decomposed when alkaline opening out is resorted to and result in yellow to dark brown products, that cannot be washed out from the fibers and cannot be bleached or at least extremely difficult by the usual means. On the other hand those fibers, which are difficult to be opened out, will even withstand an acid opening out by the usual sulphite method because they are frequently strongly silicified and always contain an abundant amount of resin and gummy substances and also lignin substances, so that even by the aid of the acid boiling processes only a partial opening out is obtained while at the same time cellulins are produced which cannot be bleached at all or with great difficulty.

The object of the present invention is to overcome these difficulties which is done by submitting such fibrous substances difficult to be opened out to a combined acid and alkaline treatment. The fibrous substances are first subjected to the action of sulphite liquor in one of the usual pressure boilers. This method differs from the usual sulphite methods inasmuch as the composition of the sulphite lye must be different. The usual sulphite solutions contain about 1 percent CaO(MgO) and 4 to 5 percent SO_2 with a proportion between the free and the combined acid of about 2:1. When such fibrous substances difficult to be opened out are boiled with solutions of the said description a substance is obtained, which, it is true, is soft but which is brown and unbleachable on account of the fact, that in such fibrous substances a greater amount of acid organic combinations of sulphurous acids (sulphone or sulphin acids) which are not fully combined by the small amounts of bases (lime, magnesium) and bring about the browning.

To avoid this according to the present invention a solution is employed, which on account of a greater percentage of bases prevent the creation of such organic free acids. The liquor is saturated with bases as much as possible without precipitating monosulphite which is difficult to dissolve, according to the percentage say for instance 3 to 4 percent CaO at 4 to 5 percent SO_2. At a maximum pressure of about 5 to 6 atmosphers and a maximum temperature of 125 to 130° cent., a boiling of 6 to 7 hours will be sufficient to open out the fibers to such an extent to make them suitable for further efficacious treatment. The fibrous substances boiled with sulphite liquor will be subjected to a mechanical disintegrating process in a known manner followed by a thorough washing operation. The intermediate and the final liquor obtained by the sulphite boiling are to be worked in a known manner into sulphurous acid and on the other hand the organic substance dissolved therein, not having undergone such an extensive destruction on account of the weak boiling, will be recovered by neutralization and precipitation or by evaporation to a form fit for use or will be treated in a known manner for producing alcohol.

The fibrous material gained by the sulphite boiling process which even when washed, still will have a more or less brown color and also contains numerous organic combinations difficult to be bleached is for the purpose of a further opening out heated together with a 5 to 10 percent solution of calcined soda or still better of caustic soda in open vessels (preferably in a bleaching engine) to 80 to 90° Cent. and then digested one or more hours according to the condition of the fibrous materials.

This is done according to the counter current principle so that the fresh soda solution comes into contact with fibers that are pretty well lixiviated while the liquor which is enriched with organic substances is brought into contact with the mass not yet digested with any alkaline liquor, so that the liquor is saturated with organic substance as much as possible. In the same manner the substance is hereafter washed with cold or hot water according to the counter current principle, the washing water saturated with alkali can be used also for the alkaline digestion. By such alkaline treatment the organic combinations that are difficult to bleach are dissolved out from the mass, so that the fibers thus purified can easily be bleached by the usual bleaching means. The organic substances contained in the alkaline solution consists mainly of vegetable proteins, fatty matters as well as gum and resin substances and can easily be extracted by neutralizing the liquor with mineral acids in a powdery form while the dissolved silicates are not precipitated. For the purpose of neutralization sulphuric acid or sulphurous acid will be most advantageous since by the same the organic substances will be precipitated to the greatest extent. When the organic substance has settled the solution of sulphate of sulphite of soda respectively will be poured off, and may be returned into the cycle of operation or after having been first rendered alkaline with caustic lime. If sulphurous acid is used for neutralization the calcium monosulphite which is formed by rendering the solution alkaline and which is difficult to dissolve can also be returned into the cycle of operation for the preparation of the fresh sulphite solution.

The precipitated organic substance may according to its chemical condition be used as an animal food when drained and dried (an analysis resulted in for instance with bagasse 5.25 percent protein, 3.30 percent fatty matters, no silicic acid, no ashes) and can also be be used for producing glue and other adhesives.

The specific claims for this invention are as follows:

1. In the method of producing cellulose and other products, the step which comprises boiling the fibrous material with a weak acid sulphite liquor at a pressure of from 5 to 6 atmospheres and a temperature not exceeding 125° to 130° Cent., then mechanically disintegrating and washing the substance, digesting it with soda at increased temperature, and finally washing it out.

2. In the method of producing cellulose and other products, the step which comprises boiling the fibrous material with a weak acid sulphite liquor at a pressure of from 5 to 6 atmospheres and a temperature not exceeding 125° to 130° Cent., then mechanically disintegrating and washing the substance, digesting it with caustic soda at increased temperature and atmospheric pressure, and finally washing it out.

3. In the method of producing cellulose, the step, which comprises boiling fibrous material with a sulphite liquor weak in acid and containing a base just short of sufficient to precipitate said base as monosulphite, said boiling being under a pressure of from 5 to 6 atmospheres and at a temperature not exceeding 125° to 130° Cent., then mechanically separating the fibers and finally digesting them with soda at an elevated temperature and normal atmospheric pressure.

Protection of Alternating Current Motors

In alternating current motor installations it is common practice to provide means for automatically disconnecting the motor from the circuit in the event of sustained overload. It is also usual, except in the case of some small motors which can be thrown directly on the line underload, to cut the motor out of circuit when the line voltage drops to a certain predetermined percentage of normal. Protection against overload is to prevent too great heating and consequent damage to the motor. Cutting the motors off the line when the voltage drops sufficiently to cause them to stop or be largely reduced in speed prevents the occurrence of various disturbances that might arise when 'e motors suddenly drew current greatly in excess normal on the resumption of the regular line voltage. To provide for both overload and low-voltage pro- tion of a.-c. motors up to 2,500 volts and 300 amperes, the General Electric Company has developed a new relay for use in conjunction with the usual type of G. E. low-voltage release. The relay consists of a solenoid and plunger, a set of contacts that are opened when the plunger rises, and a time delay arrangement, known as an inverse time limit dashpot, for retarding the upward movement of the plunger. The dashpot consists of a small covered cylindrical vessel partly filled with a special oil, and a disk containing an opening whose size can be adjusted outside of the dashpot by a needle valve on the lower end of a rod between the disk and the lower end of the solenoid plunger. The size of the opening in the disk determines its resistance to moving upward in the oil when the relay operates, and thus the time delay between the beginning of the movement of the plunger and the opening of the relay contacts. The needle valve can be adjusted to give a delayed opening of the relay contacts of from 10 seconds to 5 minutes at 25 percent overload. The current at which the relay will operate can be varied from normal to twice normal, depending on the setting of the plunger.

TYPE P. FORM C=46, SERIES INVERSE TIME LIMIT OVERLOAD RELAY

Under operating conditions the relay coil is connected in series with the motor circuit and the low voltage release coil, across one phase in series with the contacts of the relay. Thus when the current in the circuit remains at a point equal to or greater than the relay current setting for a period equal to the time setting of the dashpot, the plunger will rise, open the relay contacts, cut the current of the low voltage release coil and cause the motor circuit to open.

This relay is mostly employed with motors using self-contained compensator control, but sometimes for switchboard service when both low voltage and time delay overload protection are required. Here series relays replace the secondary relays, current transformers and oil switch tripping coils otherwise required.

Although as previously mentioned, the current calibration is from normal to twice normal, and time adjustment from 10 seconds to 5 minutes on 25 percent overload, the delay recommended is about 15 seconds at the starting current of the motor. This affords ample protection to the motor against damage from overload or single phase operation, but prevents the circuit from being opened while the motor is starting.

The new relay is a vast improvement over the one previously manufactured. The contacts, dashpot and calibrating tube are inclosed by dustproof stamped steel covers. Current and time adjustment are accomplished outside of the dashpot simply with the aid of a screw driver. The settings are constant, for an adjusting nut is locked in place after each setting is made.

A New Viscose Process

In a British patent covering the manufacture of viscose (Courtaulds, Ltd., W. H. Glover and L. P. Wilson, May 27, 1914, Brit. Pat. 13,055), the oxidation of the alkali-cellulose is effected by blowing air through it, or by treating it with soluble peroxides, *e. g.*, 2 kilos of sodium peroxide are dissolved in 200 kilos of 17.5 percent solution of caustic soda and 5 kilos woodpulp are immersed in the liquid at a temperature of 18° Cent., for about four hours. The product is then removed and pressed until it is about fifteen kilos in weight, after which it is ground and at once converted into xanthate by the action of carbon disulphide.

American Paper and Pulp Association

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Technical Section

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Thomas J. Keenan

Membership, either active or associate, is open to any person of technical education occupying a position with a member of the American Paper and Pulp Association; persons who have special qualifications or experience, and others who are qualified by their connections to support the aims of the section.

The objects of the Technical Section of the American Paper and Pulp Association as set forth in the Constitution and By-Laws are: To stimulate interest in the science of pulp and paper making; to provide means for the interchange of ideas among its members, and to encourage original investigation.

Terms and Rules for Prize Papers

NUMEROUS inquiries are being received concerning the terms and rules of the prize competition instituted by the Technical Section of the American Paper and Pulp Association, for papers dealing with the solution of technical problems. Announcement of the prize offers was made by the Publication Committee early in July, it being then set forth that four prizes of $100 each would be awarded for the best papers or monographs dealing with the following list of subjects:

(1) The various causes for the deterioration of the Fourdrinier wires and steps to be taken in the prolongation of the life of the wires.

(2) How can the pitch in sulphite pulp be eliminated?

(3) The effect of the order and time of adding alum, rosin and color on the retention of color.

(4) The retention of the various mineral fillers used in papermaking and their effect on the life of the machine clothing and the quality of the paper.

The rules governing the award of prizes in this competition are as follows:

(1) The authors of the papers presented must be residents of the United States or Canada.

(2) The papers are to reach the office of the secretary of the Section on or before December 31, 1916.

(3) Each paper must be typewritten and must not bear the author's name or address. Instead of the author's name the paper shall bear a number or other designating character or word. Accompanying the paper shall be a sealed envelope containing the author's name and address and the number or designating character by which the paper is characterized.

(4) Papers presented in this competition must not previously have appeared in print.

(5) The determination of the papers winning the prizes shall be made by a committee of three appointed by the chairman of the Technical Section. This committee shall publicly report its findings to the Section at the time of the annual meeting next after February 1, 1917.

(6) All papers received shall be returned to their authors soon after the announcement of the winning paper.

(7) The articles winning the prizes offered shall be published in the report of the organization and also in Paper, the official journal of the Section.

The object of the prize competition is to concentrate attention on some of the more important problems that confront the manufacturers of pulp and paper, and it is the intention to offer similar prizes every year. It is hoped that the competition will prove an incentive for the prosecution of original work on the part of the members of the Section which may be expected to be of great value to the industry.

The Section Shows a Healthy Growth

A large number of applications for membership have been received since the meeting of September 23. Mill chemists and engineers, as well as others connected with the industry in a technical capacity, are responding freely to invitations issued by the secretary, and the support is also assured of many in the allied lines of work who are interested in the development and extension of scientific methods in pulp and papermaking.

Membership in the Technical Section is open to any person who has had a satisfactory technical education, or who has special qualifications and experience. Associates are received who will undertake to assist and support the aims of the Section, or who by virtue of their qualifications are likely to further its work. There is no initiation fee and payment of the annual dues of $5 entitles members to receive the weekly numbers of Paper as issued, Paper being the official journal of the Technical Section.

In the ordinary routine all applications for membership must be passed upon by the executive committee, the chairman of which is Henry E. Fletcher, president of the Fletcher Paper Company, Alpena, Mich. Application blanks, together with full information regarding the organization of the Section, constitution, etc., are obtainable on request from the secretary, Thomas J. Keenan, 117 East 24th street, New York.

Publications of the German Society

In a note received from Mr. Obermanns of the Publication Committee he announces the receipt of two interesting publications issued by the Verein der Zellstoff und Papier-Chemiker, the German equivalent of the Technical Section of the American Paper and Pulp Association. He says that aside from having a most interesting and valuable content, the books are handsomely bound and form a valuable addition to a technical library. The books are entitled "Die Harze der Nadelholzer" (The Resins of Coniferous Woods) and "Herstellung der Sulfitlauge" (The Manufacture of Sulphite Liquor).

From these publications and other evidences of activity, it would appear, Mr. Obermanns adds, that in spite of the many troubles which the Europeans are undergoing at the present time, they apparently do not neglect to continue and follow up technical research work.

Papermaking in Holland has received a great setback through the world war. Manufacturers are confronted by enormously increased prices for necessary supplies, such as coal, wire cloth, felts, etc., and export trade to the Levant, which was formerly very large, has almost ceased. In consequence of the uncertainty of wood imports from Sweden and Russia, many mills have entirely stopped work.

PAPER

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The Labor Situation

IT was only a few months ago that we were discussing ways and means to provide for the employment in some way of the great army of working men in America who were idle. The cry was for work, and those who were in need of it were not so particular about the kind of labor they were called upon to perform, nor were they so exacting about their compensation.

The whole situation has changed, and changed in a very marked degree. The new condition has been brought about by both the increased demand and the diminished supply. More men are needed, while fewer are available.

Largely through the tremendously increased demand for such supplies as are required by the warring nations of Europe, and such as they are no longer in the position to provide for themselves, the industrial activity of this country has very greatly increased since the outbreak of hostilities. Not only is this occasioned by the placing in America of orders calling for the manufacture and delivery of enormous quantities of war munitions, but also by the additional requirements for clothing and other field supplies made necessary by the conditions abroad.

These demands have not only made it possible to operate to the full limit of their capacity many plants which were formerly idle, or working on part time, but it has also been found necessary to enlarge existing plants and to create new ones; all of which calls for additional labor in construction work and in providing construction materials. Necessarily, unusual activity in any industrial line reflects itself in others, so that we have today a healthy enlargement of business in many lines that are not directly affected by the war, but which are nevertheless indirectly benefited.

The unprecedented volume of money which is coming into this country as a result of the large purchases mentioned could not fail to stimulate business in a certain measure. The accumulation of currency was obliged to find an outlet and has done so by undertaking industrial developments which otherwise would not have been considered inviting. The industrial situation as a whole has undergone a material improvement in the last twelve or eighteen months, and this has created a demand for labor which did not exist a year or more ago.

On the other hand, the war has perhaps to even a greater extent affected the labor supply. In past years we have depended largely for common labor upon the steadily incoming current of immigration. The toiling masses of Europe were induced to come to America by the vastly better opportunities here afforded, and the brighter future promises here held out for their success. It has long been the rule that with our increased demand for labor, immigration was regularly accelerated, and with the falling off of demand immigration was automatically checked.

The war however in this instance, as in many others, has completely reversed all precedent and practice. The ablebodied men of Europe who are not actually bearing arms are all busily engaged in maintaining the fighting forces. Even such as desire to come to this country are not permitted to do so; they are held in restraint by the strong arm of their respective governments.

Recent reports show that aliens arriving at all United States ports from August 1 to October 6 represented only 20 percent of the immigration during the corresponding period of 1913, and a little more than 50 percent of that of the same period of 1914. From August 1 to October 6 this year 67,617 aliens arrived in the United States, as compared with 110,196 in the corresponding period of 1914 (the early days of the war), and 333,085 in the corresponding period of 1913.

And this is not the whole story. With the mobilizing of the European armies came the call from the countries on the other side for the return of their sons who were in America and who had not become naturalized citizens. Countless thousands of Germans, Austrians, Russians, Englishmen and Frenchmen crowded eastbound transatlantic boats hurrying back to their native lands. Later came the call for the Italians, who freely answered it; and now the Greeks are holding themselves in readiness to go home whenever their country may become involved in the war, which it is believed will shortly come to pass. These Europeans who are leaving America are largely of our laboring classes, and the volume of immigration has materially decreased the available supply of common labor.

Conditions are actually bad enough, but the situation is exaggerated by the labor unions which are always ready to avail themselves of an opportunity to control the labor market. Very many of the orders for war munitions are rush orders. They have been placed at good prices and the terms of delivery have been correspondingly exacting; so much so indeed that manufacturers having these contracts feel that they can under no conditions afford to lose any time and are therefore obliged to yield to any demand that may be made by their employees. Realizing this truth, demands have been repeatedly made and are still being made. All of which has a very marked influence not only on the industries immediately concerned, but upon all employers of labor.

While in the ordinary lines of industry business conditions do not justify wage increases, nor time concessions, yet these are expected and demanded simply because they are obtained in certain quarters. The result is a spirit of constant unrest and contention. Where it will ultimately lead us no one can certainly foretell, but the situation is a serious one and is becoming more so, and it is one that demands thoughtful consideration.

The most important thing to be remembered is that with the uncertainty of labor conditions and with the abundant promise of increased difficulties, no wise man will venture in a new industrial enterprise, relying for his success upon a continuance of the situation as it has been in the past; nor will any wise man who is already engaged in manufacturing contract for the sale of his product far into the future, depending upon keeping his cost of production down to what it has been in the past, or even to what it is now. Prudence requires that a factor of safety be figured in every negotiation reaching into the future. In addition, wise men who wish to continue their business without loss cannot afford to temporize. They cannot afford to settle their labor disputes simply to meet the requirements of the day, but must look to the effect which any adjustment will necessarily have upon the years ahead.

We heartily favor fair dealing with labor: more than that, we believe in the adoption of a liberal policy, not only because it is the humane thing, but because in the end we think it the best policy. We have not the slightest inclination to counsel oppressive regulations in the employment of labor. Nevertheless the man who yields readily to unreasonable demands, although he may for the time being be in a position to afford it, is doing himself an injustice and doing a great injury to other employers who are eager to continue their operations, but who are not in a position to adopt such liberal policies.

The man who permits himself to be held up in an unjust way by the demands of labor, demoralizes the whole situation and makes it difficult to maintain the friendly and equitable relations which should exist between employer and employee.

Business and Politics

WE have repeatedly made reference to what we conceive to be the duty of every business man to take an active interest in the political affairs of his country and community.

Legislation is ordinarily controlled by the politicians, and is therefore not shaped in the interest of the country's business, but more often against it. We complain of the attacks made on business and the injustice done to business; yet with few exceptions we do not apply ourselves diligently to a correction of the situation. When the time comes for action we leave political and Governmental affairs practically in the hands of the politicians, and content ourselves with complaining at what they do.

There recently came to our attention a very sensible article relating to this subject, all of which we heartily approve and commend to the careful study of our readers. It runs as follows:

> It is because the politician fears the businessman that he excites popular prejudice against him. The politician is aware that by all rules of reason and good sense, the businessman should administer the Government. Government is an enlarged business institution. Operated in an ideal way it would require fine tact and discrimination in choosing the force to propel it. With businessmen in the places of authority public servants would be chosen with reference wholly to salaries as men of like ability receive in other lines of employment. They would be held to strict accountability; promoted if efficient; discharged if incapable, and no excuses offered.
>
> The politician knows that the businessman is fully occupied with the affairs of his concern. He doesn't "have time" to build sentiment, or attend primaries or organize elections—much less "run for office."
>
> Therefore, the politician rests secure in his profession. He has time to build sentiment, attend and "set up" primaries, "run for" office or have it brought around to him on a silver platter. He chooses the nominees for all the offices and contents himself with the mere owning of them and the collection of the tolls that they afford.
>
> Some day businessmen will awaken to the fact that they are being destroyed and the Government weakened, because of their inactivity in politics. When they do assert themselves, an end will come to the enterprises of the professional politician. The businessman can show without any sort of difficulty that it is he and not the politician that is necessary to those that toil as well as to the vast number depending upon him.
>
> Plainly, it is the duty of the businessman to take his stand in the affairs of the State and Nation.

The war in Europe has had a tremendously unfavorable effect on the pulp and paper industry of the Netherlands, no such stagnation in business as is felt at present having been recorded in the 300 years of its existence. The reason is that not only is neutrality strictly observed in Holland, which has greatly reduced work in the paper mills, but great difficulty is experienced in obtaining raw materials.

THE WEEK'S LATEST TRADE NEWS

Optimism Prevails in Eastern States

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 19—"The East is literally saturated with optimism," said a prominent Fox river valley paper manufacturer, who had just returned from a trip to the Atlantic coast cities, to your correspondent to-day. "This optimism becomes weaker as one proceeds west," he continued, "but it cannot be long before the West will catch the fever." From the eastern border of Indiana to the Atlantic people are looking for little less than boom conditions, and what's more, they are actually getting them. In Philadelphia I talked with a man who manufacturers valves. He said his plant was being pushed to capacity to supply goods to the concerns that were enlarging their plants to take care of war orders. This is but a sample of what is going on. The revival that commenced with the placing of war orders, is spreading through all industries, for business generally is so intimately related that what means prosperity for one line must mean prosperity for others, and when so many lines are affected as now the resulting aggregate effect must be prodigious.

"So far as the paper business is concerned, I found in the East that apparently it had not responded quite as quickly or as strongly to the general stimulus as many other lines, but it had responded, and was gradually becoming better. So far as our business here in Wisconsin is concerned, the last two weeks have shown a decided increase. Mills making certain grades are working at capacity now and are well filled up ahead. In other grades things are quieter. My opinion is, however, that within three or four weeks the paper mills of this valley will all be working under high-pressure conditions, and that the prosperous times that the industry has so long been waiting for, will actually have arrived."

Ideal Waterpower Conditions

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 19—During the past week this locality has been experiencing usual autumn weather, the days as a rule being delightful. A normal amount of rain has been coming down, usually at night, and the streams are still at full, though not flood stage. On the Fox, some water has been drawn from the lake through the sluices in the dams, but the sluicing has not been on a large scale. Waterpower is at about an ideal stage.

At a recent meeting in Appleton of the Fox River Valley Efficiency League, John Strange, of Neenah, was elected president; T. E. Orbison, of Appleton, was elected treasurer and Judson G. Rosebush, of Appleton, was elected to the executive committee. The league proposes to make an active campaign in this locality against the use of intoxicants.

Court Decisions in Knowlton Litigation

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—The Appellate Division of the Supreme Court handed down two decisions last Wednesday in the actions started by Knowlton Brothers, Inc., of this city against the New York Air Brake Company, involving riparian rights about Beebee's Island. The court unanimously denied the motion made by the plaintiff for a reargument of the first case, with ten dollars costs, following the reversal by the Appellate Division of the referee's report sustaining Knowlton Brothers' contention as to water rights and fixing the amount of power of each user about the island. On the second matter the defendant appealed from an order by Justice Edgar C. Emerson granting an injunction in favor of Knowlton Brothers restraining the New York Air Brake Company from continuing its proposed power development pending further action in the case. BLACK RIVER.

Chemists to Discuss Aniline Colors

The meeting of the New York section of the Society of Chemical Industry on Friday evening, October 22, will be devoted to a discussion of the dyestuff situation and it is expected that the consumers of dyestuffs will be well represented and that many of those whose business is dependent upon the use of dyestuffs as well as those who are producers of these materials will take part in the discussion.

The programme of addresses and papers follows:

Do We Want A Coal-tar Chemical Industry? By E. E. Pratt, Chief of the Bureau of Foreign and Domestic Commerce, Washington, D. C.

The Aniline Industry from a Manufacturer's Viewpoint. By J. F. Schoellkopf, of Schoellkopf, Hartford & Hanna Company, Buffalo, N. Y.

The Dyestuff Situation in the United States. By Thomas H. Norton, Commercial Agent, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Common Sense on the Dyestuff Question. By J. Merritt Matthews.

The Consumers Interest in Dyestuffs. By John P. Wood, President, National Association of Woolen Manufacturers.

Forest Products Association's Meeting

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—President Frank L. Moore and the committee on entertainment of the Empire State Forest Products Association are now making arrangements for the annual meeting and banquet of the association, which will be held on a Thursday about the middle of November. Neither the exact date nor the place have yet been decided upon, but the date will either be on the 11th or the 18th of the month and the place will probably be either Albany or Utica.

George N. Ostrander, of Albany, an officer of the association and a prominent lumberman, is anxious that the meeting and banquet be held at the State capital inasmuch as it has never been held there and it has previously been held in Utica.

President Moore plans to have a number of prominent men of the country read papers or deliver addresses on subjects of interest to the manufacturers and dealers in forest products. It is expected that the American Forestry Association, the State Conservation Commission and the State College of Forestry will be represented on the programme, which is planned to be one of the best in the history of the association. If the meeting is held in Albany an effort will be made to have Governor Whitman as the guest of honor.

BLACK RIVER.

Carthage Sulphite Company Elects Officers

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—The annual meeting of the Carthage Sulphite Pulp and Paper Company was held at the company's offices in Carthage last Tuesday. At the stockholders' meeting the following directors were elected: L. G. De Cant, of this city, and James A. Outterson, I. W. DeCant, Guy C. Jones and W. B. Van Allen, of Carthage.

Following the meeting of the stockholders there was a meeting of the newly elected board of directors at which the following officers were chosen to serve during the ensuing year: James A. Outterson, president; W. B. Van Allen, vice-president; Guy C. Jones, secretary and L. G. DeCant, treasurer.

The Carthage Sulphite Pulp and Paper Company is one of the Outterson companies and manufactures a large amount of groundwood and sulphite pulp. A few years ago the Carthage Sulphite Company and the LeRay Paper Company were consolidated to form this company.

BLACK RIVER.

BRAINS vs PREJUDICE

OF COURSE, THERE IS NO ARGUMENT ABOUT YOUR HAVING BRAINS, and you will admit you have prejudices. But sometimes prejudices stultify the brain action and mistakes result. We have heard people say that under no circumstances would they use talc.

From our point of view, talking about brains, "There's Nobody Home," and prejudice was working overtime when our representative called.

BUT

"TALCLAY"

is NOT TALC. Its chemical analysis is as different as sand is from clay.

Talclay is Clay

and better than clay, because it has ingredients in it which give it more than 100% greater retention than clay, is pure white, free of grit and mica, and contains no moisture. Why pay freight on Water?

We know that the brain is working now, and that you are saying to yourself: "I believe I'll ask them if they have this, and get a sample." Do it! It will probably cut your clay bills 50%.

The St. Lawrence Talc Co., Inc.

Natural Bridge, N. Y.

Japanese Papermaker Visits Orono

[SPECIAL TO PAPER]

ORONO, Me., Oct. 19—J. Tomita, of the Oji Paper Company, Oji, Tokio, Japan, who is making a tour of paper and pulp mills in the United States and Canada was a welcome guest at the University of Maine last Wednesday. He was greatly interested in the work of the Paper and Pulp School and was impressed by the scope and thoroughness of the curriculum, which he believes will be of great value to the industry. Mr. Tomita is himself a university graduate and connected with a firm whose two mills make 150 tons of newsprint paper daily.

According to Mr. Tomita, Japanese newsprint paper is not of as good a color as the American product and contains much more dirt, shives, etc. It is also lighter, running only 26 to 28lb, whereas our newspaper runs nearer 32lb. It brings nearly five cents a pound. Their grinders are run by electric power, generated some fifteen miles from the mill. The wood is spruce and balsam fir, which is brought part way by river and then by rail.

The Oji Paper Company is not troubled with strikes but they frequently have to keep an inefficient or otherwise undesirable man because he knows how to make pulp or paper, and papermakers are scarce. The mills operate on two tours. They could save money by running the grinder rooms at night only, when power is cheaper, but Japanese labor would not consent to continual night work.

When Mr. Tomita was shown the hand molds used at Maine he said that there are still small mills in Japan where molds are used with bottoms made of reeds sewed together, like those first used in China more than 2,000 years ago.

J. N. S.

Rex Paper Mill Will Stand on Cow Pasture

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 19—From a cow pasture eight weeks ago, a strip of ground lying along the Kalamazoo river just east of the city has been transformed into one of the busiest places in this part of the State. The pasture is the site of the new Rex Paper Company and hundreds of workmen are now rushing the construction of this new mill. The first story wall has been finished and carpenters are now busy putting in the window frames. The building will be constructed of a special colored bricks manufactured in this city. Dan Albertson, the architect, and one of the stockholders of the company, says that the mill will be ready for operation early next June unless something unforeseen happens. The tracks have all been laid to the mill and real estate promotors are opening up streets in all directions around the place. It is said the sale of lots has been heavy.

E. H. Gilman's Daughter Dies

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 19—The death is reported of Miss Elizabeth Gilman, daughter of Mr. and Mrs. E. H. Gilman, after a few days illness from pneumonia. Mr. Gilman is superintendent of the Bryant Paper Company and is widely and popularly known in eastern papermaking centers where he was employed for many years. A brother of Miss Gilman, A. G. Gilman, is president of the Wheat Paper Company, of Elkhart, Indiana. Miss Gilman was only twenty-two years of age and graduated last year from the Western State Normal School where she was a popular student. She won first honors in her class.

Kalamazoo Stationery Co.'s Good Season

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 19—Directors of the Kalamazoo Stationery Company are considering the advisability of erecting an addition to the plant of the company. Rapid increases in business have greatly crowded the present plant and it has been felt necessary to erect a new building in order to take care of the business of the concern. There has been no dull season for this concern. The present year has been one of the best the company has ever experienced.

Indirect Benefits of Fox River Waterway

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 19—Mention was made in this correspondence last week of the possibility, not to say probability, of the Government's abandoning the work of maintaining navigation on the Fox river, on the ground that the expense is not warranted by the amount of commerce carried. During the past week considerable discussion of this matter has been going on in the public prints of cities of this locality, and some facts have been brought out which seem to indicate that the maintenance of navigation on the Fox river has large indirect benefits to the State outside of the immediate territory through which the river runs.

The contention that the water route keeps down railroad freight rates on bulky, heavy products, such as coal, to this valley from Lake Michigan ports, is undoubted, but evidence has lately been brought out, coming from State authorities that reductions in coal rates forced from the railroads by the water route are by no means limited to this territory, but extend to points in the State even as far distant as Madison.

It has also been brought out that the river might and doubtless would, carry a lot more freight, particularly coal, if the Government itself would modify some of the rules it has made respecting the operation of boats and their unloading in the canals alongside of which factories are located. While, therefore, it is admitted that the actual tonnage of freight now carried by the Fox river waterway is not what it ought to be, there seem to be extenuating circumstances, so to say, that ought to be considered in making a just estimate of the benefit of navigation on this river to the valley and State as a whole. It is believed that the Government will take these things into account.

Bagley & Sewall Expert on Way Home

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—Richard Gray, an expert employed by the Bagley & Sewall Company of this city, is expected back home the last of this month or the first of next, from France where he has been since November 13.

Mr. Gray, who has traveled all over the world supervising the setting up and repairing of Bagley & Sewall fourdrinier paper machines, went to France nearly a year ago to do some work on the machines of *La Petite Parisienne* mill at Nanterre near Paris. Last Tuesday he left for Scotland and on October 23, after visiting relatives in Scotland, he will sail from Liverpool for New York and then come directly to his home in this city.

Whether or not he has completed his work in France, Mrs. Gray does not know. The letter, which she just received telling of her husband's plans to return says little about the war conditions in Europe.

BLACK RIVER.

Where Manila Sacks Are Made

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—Taggart Brothers of this city, manufacturers of real manila and manila bags, are considering the erection of a new mill near their plant in Morrison street, which when completed will furnish employment to about 200 hands. Plans for the mill have been completed, but the work of construction probably will not be started before next year and it is understood that it will be incorporated under a different name for the purpose of manufacturing bags.

Taggart Brothers are among the largest manufacturers in the country of flour and cement sacks and, besides their plant here, they have interests in the Philippine Islands whence they procure the manila rope from which the bag paper is manufactured.

BLACK RIVER.

The Death of Lewis J. Powers

SPRINGFIELD, Mass., Oct. 19—At its recent meeting in Lexington, Ky., the board of review of the National Trotting Association appointed a committee to bring in resolutions on the death of Lewis J. Powers, of the Powers Paper Company. For many years Mr. Powers was a prominent official of the association serving in an official capacity for nearly forty years.

Hoyt's Turtle Waterproof Leather Belting

Hoyt's Turtle is just as high class a waterproof leather belting as it is possible to make. We've the largest and best-equipped leather belt factory in the world, cutting on an average of 5,000 butts per week. And Hoyt's Turtle is our supreme effort in waterproof leather.

Turtle is positively water, steam, oil, gas and acid-fume proof. It will run straight, hug the pully and transmit power with minimum loss. It will not crack, break or pull apart.

Every ten feet of Hoyt's Turtle is stamped with the Turtle Trade Mark. This is done for our protection and yours.

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Agents in all the Principal Cities of the World

Mr. Wardwell's Encounter With Maine Law

[SPECIAL TO PAPER]

BANGOR, Me., Oct. 19—S. B. Wardwell, secretary of the West End Paper Company, of Carthage, N. Y., on a recent trip to Maine experienced some difficulties because of his ignorance of a law passed by the Maine legislature in 1913.

There has been a strike on at the Carthage plant, although the mills are operating on full time, and Mr. Wardwell came to Maine to obtain workmen. He offered, in an advertisement, $3.50 to $4 a day for papermakers and machine tenders, $2.25 to $2.50 for backtenders and $1.75 to $1.90 for windermen. But in his advertising he came into opposition with the Maine law which provides that employers during the continuance of a strike or labor trouble at their plants, if advertising for employees must state plainly in such advertisement that such strike or trouble exists.

This Mr. Wardwell did not do and as a result complaints were made to the State Department of Labor and after investigation by Henry M. Donnelly, deputy commissioner of labor, complaint was made against Mr. Wardwell and the latter was arraigned in the Bangor municipal court. Through counsel Mr. Wardwell stated that he was not familiar with this phase of the Maine law and had not intended to violate any Maine laws, although technically guilty.

Mr. Wardwell paid the costs and the case against him was discontinued, such decision being satisfactory to the Department of Labor. This was the first instance of prosecution under this law.

EASTERN MANUFACTURING COMPANY NEWS

F. W. Ayer, of Bangor, president of the Eastern Manufacturing Company with pulp, paper and lumber mills at South Brever is to launch into a new enterprise, having started the construction of a great dairy farm in this city. Mr. Ayer recently purchased a farm of 100 acres for this purpose. The stock stable will be about 220 feet in length with walls eight feet high and a sloping roof. There will also be a dairy barn, a calf barn and four silos.

The Eastern Manufacturing Company has decided to establish a service department at its South Brewer mills and in connection with this plan has engaged the services of Mrs. Jane Hoskins, of Oakland, Calif., who is experienced in this line. The plan is to help the employees in every possible way and the first steps will include the establishment of a library at the mills, a first aid department and dispensary, a lunch room will also be opened where satisfactory lunches will be served at a moderate figure. There will also be instruction for the employees, particularly in the study of the pulp and paper industry and special attention will be paid to problems arising in connection with the home plant.

MR. TOMITA ACQUIRES INFORMATION IN MAINE

J. Tomita, of Tokio, Japan, has been spending the past fortnight in the study and inspection of Maine pulp and paper mills, having come to this country for the purpose of gaining information relative to the industry. He is a mechanical engineer in the employ of the Oji Paper Manufacturing Company, Oji, Tokio.

Mr. Tomita expresses his delight with the great development of the industry in the United States. He appreciates the permanent construction of the Maine mills, many of which are built on solid foundations close to rivers. Previous to coming to this State he visited mills in New York and Canada. In this vicinity he visited the mills of the Eastern Manufacturing Company, the International Paper Company, the Penobscot Chemical Fibre Company, the Orono Pulp & Paper Company and the St. Croix Pulp & Paper Company at Woodland. He is paying special attention to the mechanical pulp processes and chip-making for sulphite pulp.

Mr. Tomita admits that the United States is far ahead of Japan in papermaking but says that Japan is learning rapidly. He expressed much interest in the papermaking school at the University of Maine, the only school in such an institution in the country and thought the course an admirable one and one that will before long be established in many educational institutions.

James Rice, who died on Friday, October 15 at his home in this city, was for many years one the best known lumbermen and timberland owners of the State. He was for a long time engaged in extensive lumbering operations on the West Branch and owned large timberlands there, these later being sold to the Great Northern Paper Company in the development of its great plant at Millinocket.

The extensive lumber manufacturing plant of the Mattawamkeag Lumber Company at Island Falls was seriously damaged by fire last week with a resultant loss of some $30,000. The fire, which started in the early evening, is supposed to have originated from a hot box near a shingle machine. The flames spread rapidly and did much damage to the lower floor and to the engine and boiler room before they were subdued. About seventy men will be out of employment until the repairs are completed.

Notes of General Interest from Holyoke

[SPECIAL TO PAPER]

HOLYOKE, Mass., Oct. 19—George Robert Burkhardt, salesmanager for the White & Wyckoff Company and Miss Edwina Harriet Pope, daughter of Mr. and Mrs. C. E. Pope were married last Thursday at the home of the bride on Northampton street.

Robert Elliott, a veteran papermaker employed at the George R. Dickinson division of the American Writing Paper Company, dropped dead from heart disease when returning from the mill to his home last Friday.

A number of papermakers were at the Republican lunch and heart-to-heart talk held at the Holyoke Club, Friday evening, including S. E. Whiting, of the Whiting Paper Company, C. A. Chase, of the American Pad Company, J. H. Newton, formerly president of the Chemical Paper Company, W. S. Barr of the Baker-Vawter Company and George A. Savoy of the National Blank Book Company.

The visit of W. Murray Crane, of Dalton, to the city Friday was marred by an automobile accident. Mr.Crane's machine, was proceeding up Main street with his chauffeur Michael Drea at the wheel when a six-year old boy crossed the street in front and dodged back again directly in front of the machine, giving the driver no chance to avoid a collision. The boy had a leg and arm fractured and is in the city hospital. In the machine with Mr. Crane were former Mayor McInnis, of Pittsfield, and Solomon B. Griffin, managing editor of the Springfield *Republican*.

After several most discouraging months in the paper trade, there now seems a little betterment of conditions and there are prospects for a little livelier trade. While orders are far from brisk, yet they are beginning to show an improvement and there are hopes expressed of still livelier business to follow.

Negotiations are pending for a lease to the Des Arts Studio, Inc., of the upper stories of the new mill building to be erected on Race street for the Holyoke Supply Company. The Des Arts Company, has been doing business in the Murlless block on High street ever since its organization three years ago. The firm deals in the manufacture of papeterie and stationery novelties.

Watervliet Company May Enlarge

[SPECIAL TO PAPER]

WATERVLIET, Mich., Oct. 19—Stockholders and directors of the Watervliet Paper Company have not yet decided what steps will be taken toward the possible enlargement of the company's plant. A meeting was held sometime ago to discuss affairs and to consider the advisability of enlarging the capital stock of the company so as to take care of increased business. While the matter was thoroughly gone over at this meeting of the stockholders, no action was taken and the meeting was adjourned to a future date.

William Loveland, former secretary of the Kalamazoo Paper Company, is now the manager of the Watervliet Paper Company and under his able management the affairs of the concern have gotten along very nicely, but a greater working capital is deemed by some interested in the company as a necessity, although at the present time the company has an excellent business and is in a position to handle it advantageously.

"That's something I never knew," said a factory manager.

This man with a reputation as an "efficiency expert" was sure that he had stopped every power leak. But after reading our "Story of Some Friction Tests," he realized that he had overlooked the stuffing boxes of the engines.

And he was convinced, as you will be when you read this scientific treatise on rod packings, that sometimes as much as $500.00 worth of coal is wasted, annually, overcoming excessive and unnecessary friction on the rod that could have been prevented by the use of

DANIELS ROD PACKING P.P.P. FOR STEAM, AIR, WATER, AMMONIA

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Remember, this is not the usual booklet making extravagant claims for the goods it advertises—"The Story of Some Friction Tests" is a most comprehensive and valuable study of the whole subject of rod packing. It is the combined results of the investigations and work of six or eight men—each a specialist in his particular mechanical line.

To the man who pays coal bills or the one responsible for efficient and economical operation of a steam plant, this booklet is invaluable.

The Story of Some Friction Tests

Forty-four pages, illustrated with many drawings, photographs, diagrams, charts, etc. A copy will be sent FREE on request. The supply is limited.

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Mr. and Mrs. Kimberly's Golden Wedding

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 19—Mr. and Mrs. J. A. Kimberly, the former being the venerable president of the Kimberly-Clark Company, expect on Monday, November 1, to celebrate the fiftieth anniversary of their marriage. It will be at the home of their son J. C. Kimberly, in Neenah, which was formerly the J. A. Kimberly homestead, the change to the ownership of the son having been made when Mr. and Mrs. Kimberly finally decided to make Redlands, California, their principal place of residence. James A. Kimberly and Miss Helen Cheney were married at Logansport, Indiana, November 1, 1865, and the notable anniversary of this event will take the form of a family reunion.

The sons and daughters of Mr. and Mrs. Kimberly and the grandchildren, include the following: Mr. and Mrs. John A. Kimberly, and son, Knox Kimberly, who reside at the Athearn hotel in Oshkosh; Mr. and Mrs. W. Z. Stuart and son, Kimberly Stuart of Neenah; Mr. and Mrs. James C. Kimberly, and sons, Jack and James, and daughter, Miss Geraldine Kimberly, of Neenah; Mr. and Mrs. Nathan Paine, Oshkosh; Mr. and Mrs. Clinton Curtis and sons, Caleb and John, and daughter, Miss Helen Curtis, of Long Beach, Cali; Mr. and Mrs. Albert Shirk, of Peru, Ind., and Mr. and Mrs. D. E. Bergstrom, and son, George, and daughter. Miss Alice Bergstrom, of Los Angeles, Cal. There will also be present two sisters of Mrs. Kimberly, Mrs. Chas. Knight, of Fort Wayne, Ind., and Mrs. John Nelson, of Logansport, Ind., who will be the guest of Mrs. Nathan Paine, of Oshkosh, during their visit to Wisconsin.

STATE NEWS FROM WISCONSIN

M. H. Ballou, of the Menasha Paper Company, has been reelected a director of the Wisconsin Central Railway Company.

Mr. and Mrs. M. A. Wertheimer, of Kaukauna, departed last week for New York and other eastern cities, to be gone for about two weeks.

Mr. and Mrs. C. W. Stribley, of Kaukauna, are planning to leave before long for a two months' pleasure trip to the Pacific coast.

Alex. W. Macvie Weds Miss Blizzard

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 19—Alexander W. Macvie, of the Bryant Paper Company, who is employed there as chemical expert, was married today to Miss Merle M. Blizzard, a popular young woman in Kalamazoo society circles. Mr. Macvie is a native of Scotland and received his training as a paper chemist and expert with Dr. Quirin Wirtz of London, afterwards being employed as chemist and assistant superintendent at Y. Trotter's Son Ltd. Before coming to Kalamazoo he was employed as chemist by the West Virginia Pulp and Paper Company for two years. He is a member of the Technical Section of the American Paper and Pulp Association.

Lee Paper Co. Abandons Papeterie

[SPECIAL TO PAPER]

VICKSBURG, Mich., Oct. 19—The Lee Paper Company of this place has decided to sell out its papeterie business and devote all of the time of its employees strictly to the manufacture of paper. The papeterie machinery has been purchased by the Kalamazoo Stationery Company and the printing machinery is also offered for sale. The Lee Paper Company has enjoyed an excellent paper business and the officials did not care to run the papeterie department any longer. The machinery is being moved to Kalamazoo, where it will help relieve the crowded capacity of the Kalamazoo Stationery Company.

Big Water Tank Falls and Stops Power

WINDSOR LOCKS, Ct., Oct. 19—About thirty employees in the factory of the T. H. Whittesley Company, paper manufacturers at Windsor Locks, had a narrow escape last Wednesday when the 1,600-gallon water tank on the top of the building fell with a crash. One side of the building was badly damaged. The tank went through the floors to the cellar of the building and landed on top of the rotary engine, stopping the power.

Laying Track for Pulpwood Railroad

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—Four miles of track have already been laid for the new railroad of the Newton Falls Paper Company having a junction point with the Carthage & Adirondack branch of the St. Lawrence division of the New York Central at Aldrich and a terminus in the heart of the Middle River timberland tract, the stumpage of which was purchased by the company several months ago. About two miles more remain to be built.

President Frank L. Moore, of the Newton Falls company stated today that the road was in condition to haul wood now, but that it was not necessary as the company has plenty of wood at its mill at Newton Falls for the present time at least.

Sometime in the near future the railroad will be incorporated and managed separately from the paper mill. What name the railroad will bear has not yet been decided.

Body of Laborer Found in Black River

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—Early last Saturday morning the dead body of a foreign laborer was taken out of Black River at the racks of Taggart Brothers Paper Company. The man had apparently died accidentally and there was nothing to indicate his identity except a brass check such as is issued by employers to foreign laborers. This check bore the initials, S. C. Company and the number, 45. As to whether the man was an employee of a paper company it is not known. It is not believed that he was either a strikebreaker or striker at the Deferiet plant of the St. Regis Paper Company, as none of the men from there are missing so far as known. Neither is it believed that any of the men there on either side got into struggles which would have caused the death of any of them by foul play. The body had been in the water several days.

BLACK RIVER.

Freight Traffic Affected by Strikes

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 19—Because of the paper mills strikes, which have been in progress in several mills in this part of the State since last May, the freight traffic of the St. Lawrence division has not increased as rapidly as has the traffic on other divisions of the New York Central, it was stated today by Division Freight Agent Frank L. Wilson.

Mr. Wilson stated that the paper mills were shipping less paper than they were during the corresponding period of the previous year. This is the greatest newsprint section in the world and the paper shipments form no small proportion of the freight traffic of the division.

New Industries for Pittsburgh

PITTSBURGH, Pa., Oct. 19—Announcement is made by the Pittsburgh Industrial Development Commission of the location of a new and important industry in the Pittsburgh district and simultaneously of the closing of an important land and coal deal after considerable negotiation.

The commission has completed negotiations for the establishment of a large plant in Monongahela City by the Stauffer Chemical Company, one of the largest manufacturers of chemical products in America. The company has taken title to 110 acres of land on Pigeon Creek, Monongahela City, known as the Robinson tract and has taken under option for a period of years an additional 100 acres adjoining for the purpose of providing for future expansion.

Furthermore the Pittsburgh Industrial Development Commission has closed, in behalf of the chemical company, an option on coal lands for the purpose of assuring the company of its own fuel production. The coal lands leased in the deal are in Carrol Township, Washington county.

John Stauffer, of San Francisco, president of the company and Albert Walter, of New York, eastern director, together with W. C. Douglas, secretary of the Industrial Development Commission completed negotiations for all properties involved last week and plans will be drawn at once with a view to having the first buildings under construction before the winter season.

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SOLID MATTER

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It contains no water on which freight has to be paid.

It does not freeze in winter or leak in summer.

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SAVANNAH, GEORGIA.
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Chicago, Ill.-

Chillicothe to Have New Coating Plant

[SPECIAL TO PAPER]

DAYTON, O., Oct. 19—Announcement was made the past week by the Mead Pulp and Paper Company, of this city, of its purpose to construct a four-machine coating paper plant at Chillicothe, where its present plant is located. It is understood that the building will be constructed at the corner of Ninth and Paint streets and extend back to Caldwell street. which has been vacated by the City Council and dedicated to the company. The company had formerly purchased a number of lots across that thoroughfare from the plant and the City Council voted to vacate Caldwell street in recognition of the splendid improvement the company is planning to make.

The machines to be installed in the new mill will be of the double coating kind and of the most modern type. The complete details of the proposed plant have not yet been disclosed but it is understood that it will be one of the most complete of its kind in this part of the country.

When the new mill is completed it will necessitate the employment of considerable additional help and the product of the company will be materially increased.

"We expect to be busy next year," said Arthur L. Rieger, treasurer and salesmanager of the company. "Our business is now improving quite rapidly and we have every reason to believe that the next year will be one of the busiest in our history. We already have the assurance of enough business to keep our plant going under normal conditions throughout the entire year, so what we are able to add to that in the meantime will be, in a measure, 'velvet.' Our plant is running with a full force and on complete time now. During a portion of the summer we were compelled to reduce our force somewhat and also cut down the working time to five days a week. However, things have radically changed and the present conditions are a vast improvement over what they were. And yet I don't believe the end has been reached. The country, industrially, is now making a very steady and substantial advance and if the next year does not bring forth a great volume of business, it will demonstrate that indications can not be taken to have any significance."

The Mead company is engaged in the manufacture of the highest grade of book paper, its product being known as "enameline." The new mill will have coating paper as its product exclusively. It is expected that the work on the new building will be begun by the first of the year. It will be then pushed to completion. It is planned to construct a warehouse first and it was for this purpose that the space occupied by Caldwell street, was desired. The preliminary details for this building have already been begun.

STEPS IN THE ANTITRUST SUIT

In the suit of the Chicago Folding Box Company against the Colin-Gardner Paper Company and others, Judge Hillister, Thursday made an entry in the United States District Court at Concinnati on the demurrers of the plaintiff to certain defenses contained in the second amended answers of the Colin-Gardner Paper Company and E. T. Gardner and the Franklin Board and Paper Company, of Franklin, and George Little, of Cedarville. The demurrer to the second defense to the first and second causes of action are overruled and those to the third, fourth and sixth defenses are sustained. This action constitutes another chapter in the long-drawn out litigation between the Chicago concern and certain other companies which it charged with violation of the Sherman antitrust law.

J. Love Cox, of Sarah Street, Urbana, an employee of the Urbana Paper Board Company, suffered a severe injury Friday to his right foot while helping to shift some cars along the side track. He was handling a team of mules and one of them stepped on his foot, fracturing a number of the small bones.

Members of the Allied Printing Trades Council, of Cincinnati, heard an address Friday night by Superintendent J. E. Condon, of the public schools of that city. The question discussed was the advisability of introducing into the public schools a cooperative course in printing. A committee of nine was appointed, consisting of two from the Allied Printing Trades Council, two from the Printers' League, two from the Ben Franklin Club, two from the employers of printers and one from the public schools, with instructions to investigate the matter and report at the next meeting, which will take place at an early date yet to be set.

Strike in Paper Machinery Works

[SPECIAL TO PAPER]

DAYTON, O., Oct. 19—The machinists of the Hooven, Owens & Rentschler Company, of Hamilton, Ohio, engaged in the manufacture of papermaking machinery, walked out Thursday afternoon and the plant was compelled to close down. Those who are in authority among the machinists do not call it a strike but simply a walk-out to enforce their demands. These demands, as presented to the Hooven, Owens & Rentschler Company, were for a reinstatement of two men recently discharged, a straight eight-hour day and for the recognition of a shop committee representing the men, but not necessarily a recognition of the union, as such.

J. C. Hooven, president of the company, in commenting on the situation, said: "Yes, our big shop is shut down. About four hundred men in all departments are out. The walk-out came as a surprise, because Friday morning there was a vote taken by the men in the shop and only twenty votes were cast in favor of a strike, thirty-seven neutral votes were cast and 354 voted 'No!' In the two big departments the votes seemed conclusive. The foundry voted 120 'No!,' twenty-eight 'Yes' and thirty neutral. In the machine shop practically the same proportion wa smaintained. These figures will demonstrate that we had reason to be surprised when the men went out."

DEMANDS OF MEN WILL NOT BE GRANTED

In response to an inquiry as to what demands the union had made, Mr. Hooven said: "The union asks for a forty-eight hour week, a shop committee and the reinstatement of four discharged men. These demands we cannot grant. The four men were discharged because they were incompetent and because they were stirring up strife. They were not let off because they were union men, as the shop has always had union men in it. The men will not be reinstated, that is positive and final. Our shop is shut down in all departments and for the present, at least, the company has no formal statement to make. However, it is now determined that the demands will not be granted."

Several conferences have been held but as yet an amicable adjustment does not seem probable.

Original Manufacturer of Felt Dies

PIQUA, O., Oct. 19—W. C. Gray, who with his father, Francis Gray, was one of the founders of the F. Gray Company, Piqua, O., one of the first concerns in this country to manufacture woolen felts, died at his home in San Diego, Cali., on Thursday, October 14, aged seventy years. Mr. Gray is survived by his wife, Emma B. Gray, a daughter, Grace N. Gray, of Auburn, N. Y., and a son, J. F. Gray, of Chicago, Ill.

American Barkers are in Demand

Some recent installations of the American Barking Drum have been reported from Wisconsin. The Island Paper Company, of Menasha, has equipped the woodroom with a drum of the dimensions 10 ft. x 30 ft., and a drum of the same size has been sold to the Marathon Paper Mills Company, of Rothschild. The Marinette & Menominee Paper Company, of Marinette, has invested in two drums of 8 ft. x 20 ft. dimensions each.

The American Barking Drum is a continuous process apparatus invented by H. Guettler, and it is made and marketed by the American Barking Drum Company, 1471 South Michigan Avenue, Chicago, Ill.

Eaton, Crane & Pike Add to Force

PITTSFIELD, Mass., Oct. 19—An increase in business is reported at the plant of Eaton, Crane & Pike and about twenty-five more hands have been added to the force at Mill No. 2, making the force there about sixty, or the same number as was formerly employed before the business depression which caused a curtailment in the working force.

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Chicago, Ill. - - 124-126 West Lake Street
Philadelphia, Pa. - - 821-823 Arch Street
Pittsburgh, Pa. - - - 420 First Avenue
St. Louis, Mo. - 218-220 Chestnut Street
San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

Arrival of Coal Tar Dyes

The Secretary of Commerce announced on October 13 that fifty tons of coal tar dyes consigned to him for the account of William A. Mitchell, of Lowell, Mass., representing the National Association of Cotton Manufacturers, were arriving on the steamship *St. Louis*.

Several months ago the secretary consented to act as consignee of two cargoes of dyes from Germany, for which safe passage was assured by permits granted by the British Government upon the express condition that the Secretary of Commerce would be the consignee. Arrangements were made by American manufacturers with the British Government whereby that Government permitted the exportation to the United States of the dyes. It is hoped that this is the first of a series of similar shipments. The Secretary of Commerce has expressed a willingness to act as official consignee of merchandise coming from any foreign country whose authorities may deem such a course necessary.

Crisis Impending in Dye Scarcity

In a recent interview, Dr. Thomas H. Norton, chemical expert of the Bureau of Foreign and Domestic Commerce, with headquarters at the Custom House, New York, expressed himself as follows regarding the prospects for relief in the matter of supplies from the old and New American concerns now turning out intermediates and dyestuffs.

"There seems to be no doubt," said Dr. Norton, "from the great number of reports received by the investigating bureau that a crisis is about to be reached in the dyestuffs shortage situation. From all sections of the country reports are to the effect that dyestuff stocks at manufacturing plants are practically cleaned up. The situation is bound to be severe until after the American dyestuff industry is in a position to supply to consumers the colors most urgently required.

"While there is no question that the foundation for a permanent American coal tar color industry is being laid, it is likely to take a year or two to furnish half of the artificial dyestuffs now in current use. I should also say it make take four or five years before nine-tenths of the colors now regularly used in American textile and other factories are made from American benzol, toluol, napthalene, phenol, anthracene and carbazol.

"In making the above statements I am not overlooking the fact that some of the American color plants established before the European war are now turning out three or four times the quantity of colors that they were a year ago, but it will certainly require a fair amount of time, both from the old and new concerns, before anything like adequate supplies can be furnished consumers in the industries. In the meantime the American public will have to exercise much patience as well as forbearance. There will be lots of colors and shades in fabrics formerly supplied the public, which it will not be possible to produce temporarily and many of us will have to rest content by making larger use of plain white goods.

"It is also certain that textile manufacturers during the interim at least will have to make larger use of the vegetable or natural dyes. These will have to be brought into service even though dyers, long trained in handling coal tar colors, are averse to handling them, owing to their unfamiliarity in preparing these colors. While within a reasonable time some of the new process colors may play an important part in helping to relieve the shortage, time is required to overcome many obstacles incident to working in new fields."

Bredt & Company, selling agents for the Pearsite Company, holders of the new cannel coal dyestuff process, while receiving many orders for the new dyes, have so far made no commercial deliveries, although the plant at Cannel City, Ky., has been in operation for a fortnight.

While developments are expected in the turning out of dyestuffs by the Standard Oil Company and the du Pont de Nemours Powder Company, either separately or in combination, such action will, in the opinion of the Government's investigators, be too late to prevent a serious temporary crisis in the industrial world dependent on a steady and adequate supply of colors. Dr. Norton said there was no question but that in the end the American dyestuff industry would be able to meet practically all of the needs of domestic users.

Aniline Color Shortage

Newspaper publishers prefer the newsprint paper they use to be a bright and clean approximation to white, and this can only be done by using aniline colors in the process of manufacture.

The publisher who advocates free trade is as insistent about this as a protectionist, but when the results of free trade hit him in a tender spot he is usually the loudest to complain.

This country is short of aniline dyes and this fact is painfully apparent when you look at a collection of newspapers on a newsstand.

A specific duty sufficient to put this country in the way of supplying itself should be written into the tariff schedule as soon as Congress meets.

Read the following and then see that your Congressman gets busy:

Since 1883 American manufacturers have not been able to get sufficient protection to warrant the development of the industry. In 1883 there were about ten factories in the country and all were doing well, but the duty was taken off, and as a result six of the factories went out of business, and the others, although they have held on, have done so under most discouraging conditions.

Prior to 1883 the duty was 35 percent ad valorem and 50 cents a pound specific on aniline colors, probably enough to help the development of the business. It was in 1883 that the specific duty of 50 cents a pound was abolished, leaving only the ad valorem duty of 35 percent and fixing a 20 percent duty on the intermediate products, which left only a net protection of 15 percent.

This is not sufficient to equal the difference in the cost of manufacture in this country and in Germany. The difference in cost is about 44 percent, mostly due to the higher American scale of wages. If the country waits until the European war comes to a close, it will be too late to induce capital to invest in the dye industry. It can and should be done now.—Editorial in *The Fourth Estate* for October 16, 1915.

Opportunities for Export Trade

CIGARETTE PAPER

An American consular officer in India reports that a firm in his district desires to be placed in communication with American manufacturers of cigarette paper. Refer to File No. 18709.

AMERICAN PAPER FOR PARIS

An American consular officer in France reports that a firm in his district desires to purchase paper, samples of which may be examined at the Bureau of Foreign and Domestic Commerce or its branch offices. (Refer to file No. 66847.) Quotations must be made "free delivery Paris."

WATERPROOF PAPER

An American consular officer in Burma transmits to the Bureau of Foreign and Domestic Commerce the name and address of a firm in his district which desires to receive full information relative to a sole agency for the sale of waterproof paper, roofing materials, etc. Prices should be made c. i. f. destination. File No. 18707.

WRAPPING PAPER

An American consular officer in Chile transmits the name and address of a business man in his district who desires to purchase wrapping paper, similar to the examples, which may be examined at the Bureau of Foreign and Domestic Commerce or its branch offices. (Refer to file No. 66,757.) The consular officer also transmits names and addresses of other paper dealers in his district.

PAPER AND PASTEBOARD

An American consular officer in Italy reports that a firm desires to purchase a quantity of paper and pasteboard, samples of which have been transmitted with the report and may be examined at the Bureau of Foreign and Domestic Commerce or its branch offices. (Refer to File No. 66592.) References furnished. Samples, as well as terms and discounts, are requested. Correspondence should be in French or Italian, but English may be used.

Technical Problems To Be Solved

A prize competition has been instituted by the Technical Section of the American Paper and Pulp Association for papers or monographs dealing with the solution of the following technical problems:

(1) The various causes for the deterioration of the Fourdrinier wires and steps to be taken in the prolongation of the life of the wires.

(2) How can the pitch in sulphite pulp be eliminated?

(3) The effect of the order and time of adding alum, rosin and color on the retention of color.

(4) The retention of the various mineral fillers used in papermaking and their effect on the life of the machine clothing and the quality of the paper.

Four prizes of $100 each will be paid for the best paper submitted on each of the stated subjects.

For further particulars apply to the secretary of the Technical Section of the American Paper and Pulp Association, Thomas J. Keenan, 117 East 24th street, New York.

THE MARKETS

NEW YORK, October 19, 1915

MECHANICAL PULP

So far as local trading is concerned there is no change to report in the market for mechanical pulp—the demand being wholly negligible. The transactions of the week included sales of small lots for immediate delivery at the current range of quotations, or say, $15.90 to $16 f. o. b. grinding mills. Paper mills having woodgrinding equipments continue to operate to full capacity, taking advantage of favorable water conditions, thereby adding further supplies to stocks on hand. An increased demand for newsprint is, however, making heavier inroads on the available supply. This, together with a recent renewal of the export market has served to steady the views of domestic manufacturers to some extent, though most of the business is confined to Canadian pulp manufacturers.

DOMESTIC AND FOREIGN CHEMICAL PULP

The feature of the market is the continued upward tendency of prices, in sympathy with the situation in primary markets abroad. The scarcity of raw materials, which tends to keep down production in Norway and Sweden, and a demand from European countries far in excess of the output are forcing prices skyward on chemical pulp. There is more disposition shown by paper mills to make purchases and inquiries during the week were numerous, though few large transactions have been actually reported. Local representatives of foreign mills found it rather difficult to close contract orders with Scandinavian pulp manufacturers, which was not due to full prices bid, but to the former practically ignoring the American market, being taxed to their utmost to fill the unprecedented demand abroad at high prices. With little prospect of any relief from Europe and Canada and domestic mills being taxed to their utmost to meet the present requirements of consumers in this country, some sensational market changes may be witnessed within the next two months. Importers and domestic manufacturers continue to quote prices on the former basis.

Sulphite, foreign—	
Bleached, ex-dock	3.00 @ 3.10
Unbleached, ex-dock	1.95 @ 2.15
Sulphite, domestic—	
Bleached, ex-dock	2.70 @ 2.80
Unbleached, ex-dock	2.00 @ 2.15
Soda, domestic—	
bleached delivered	2.20 @ 2.30
Scandinavian Kraft	1.90 @ 1.95

BAGGING, ROPE, ETC.

The general sentiment among dealers is more optimistic, owing to a fairly steady buying movement covering both bagging and rope of various varieties at ruling values. In many quarters dealers are increasing their stocks, in the anticipation of a renewal of the buying movement by mills, which are likely to be forced into the market sooner or later in order to replenish supplies. Quotations closed steady to firm, but unchanged with an upward trend.

Gunny, No. 1	1.85 @ 1.90
No. 1 Mill run	1.45 @ 1.70
Domestic	1.60 @ 1.70
Light Burlap	1.60 @ 1.75
Mixed Bagging	1.00 @ 1.05
Sound Bagging	1.20 @ 1.30
Wool Tares, light	1.65 @ 1.75
Wool Tares, heavy	1.60 @ 1.70
Foreign Manila rope	2.60 @ 2.65
Domestic Rope	2.75 @ 2.85
Mixed Rope	1.05 @ 1.10
Flax Waste	3.45 @ 4.00

IMPORTED RAGS

The steady decrease in the importation of rags serves to strengthen the statistical position of this commodity. Owing to the slow demand from paper mills and large stocks held by distrbutors, no perceptible change in prices is noted, and the close was nominally steady. In some quarters dealers are still willing to shade quotations on round lots, while others are holding off anticipating freer inquiries and more business at more remunerative figures than the present low basis of values.

German Blue Cottons	2.20 @ 2.25
Dutch Blues	2.20 @ 2.30
French Light Blues	2.20 @ 2.45
New Light Prints	3.70 @ 4.45
New Mixed Prints	2.95 @ 3.40
German Linen Blues	3.45 @ 4.15
German Linen, Gra-	4.45 @ 5.28
German S. P. F.'s	3.45 @ 3.65
German Light Prints	1.95 @ 2.45
Dark Colored Cottons	1.10 @ 1.20

DOMESTIC RAGS

A firmer tendency of prices covering the entire list of rags, is gradually strengthening the views of dealers and price shading is no longer so much in evidence. Inquiries are steadily on the increase and indications point to an early general replenishing of stocks by paper mills. Dealers and packers are actively engaged in gathering in supplies to increase their present moderate stocks in order to be ready for a renewal of the buying movement by mills. Prices closed firm and upward, though quotably unchanged.

New Shirt Cuttings, No. 1	5.20 @ 5.40
New Shirt Cuttings, No. 2	3.45 @ 3.65
Fancy Shirt Cuttings	3.30 @ 3.60
New Blue Cottons	2.70 @ 3.15
New Dark Cotton	1.45 @ 1.70
New Unbld ctgs	5.45 @ 6.00
New Black Cottons	1.70 @ 1.95
No. 1 Whites	2.70 @ 3.20
Soiled Whites, street	1.15 @ 1.25
Soiled Whites, house	1.75 @ 1.90
Thirds and Blues	1.30 @ 1.40
Satinette Garments	1.10 @ 1.20
No. 3 Satinettes	1.00 @ 1.05
No. 4 Satinettes	.85 @ .90
No. 1 Tailor's Rags	.70 @ .75

TWINES

Nothing of special interest has been noted throughout the week. Trading in both domestic and export lots lacks animation, partly as a consequence of the uncertainty of the market for the raw materials and the difficulty of securing freight transportation to foreign ports. Quotations on both twines and rope closed wholly nominal and without change.

Sisal Hay	8½ @ 9
Sisal Lath Yarn	8 @ 8½
Manila Rope	12½ @ 13
Manila Rope, No. 2	11½ @ 12
Jute Rope	6¾ @ 7¼
Jute Wrapping Twines—2 to 6 ply—	
No. 1	10½ @ 11
No. 2	8½ @ 8¾
Jute Twines, 18	12¼ @ 12¾
Jute Twines, 24	11¾ @ 12¼
Jute Twines, 36	11¼ @ 11¾
Jute Twines, 46&60	11¾ @ 11¾
Jute Twines, 4½&6	6¾ @ 7¼
Paper Maker's Twine	5½ @ 6
B. C. Hemp, 18	17 @ 17½
B. C. Hemp, 24	16½ @ 16¾
B. C. Hemp, 36	16 @ 16½
Amer. Hemp, 4½&6	14½ @ 15

OLD PAPERS

Inquiries are more numerous and well distributed over the entire list of old papers. The volume of business transacted for the week just ended, however, shows no perceptible increase but paper manufacturers are displaying more of a disposition to take hold of supplies on a larger scale. Attention of buyers appears to be mostly centered on the better graded higher and low kinds of paper. Spot stocks are moderate and with little prospect of larger collections in the near future, dealers in many sections are firmer in their views on prices.

Continued on page 36

Telephone {1700 1701} Broad   Cable Address, "Lageriot Newyork"
Scandinavian-American
Trading Company
PRODUCE EXCHANGE BUILDING, NEW YORK
IMPORTERS AND EXPORTERS OF
FOREIGN AND DOMESTIC
WOOD PULP
OF ALL KINDS
AND
PAPER MILL SUPPLIES
HANS LAGERLOF, Pres.

Use Positive Filling

Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

Many anxious Paper Manufacturers have said many times: "If that Wood and Steel filled Jordan only doesn't tear out we will get the order out in time; if it does tear out the order is lost."

Use our Positive Fillings; they don't tear out; they reduce your manufacturing cost, and increase your production—that spells "PROFIT."

Prices on application

BAHR BROTHERS MANUFACTURING CO.

211 I. O. O. F. BUILDING MARION, IND.

SINCE 1878

BUCHANAN & BOLT WIRE CO.

HOLYOKE, MASS.

OUR SPECIALTY

FINE WIRES FOR MAGAZINE AND BOOK PAPERS

Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires

Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.

QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON

Foreign & Domestic
RAGS & PAPER
STOCK
New Cuttings. Jute Stock
Sizing
SULPHITE &
SODA PULPS

200 FIFTH AVE., NEW YORK

L. L. BROWN PAPER CO.

Adams, Mass.

Makers of First Class

LINEN LEDGER and RECORD PAPER

for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records

Ledgers
Linens
Bonds

TRADE MARK

Brown's Papers have always received the highest awards whenever exhibited in competition with other makes

Mills established 1850

The Watermark of Quality

LONDON: TEMPLE BAR HOUSE, 28 FLEET ST.

SYDNEY MELBOURNE WELLINGTON BOMBAY

Parsons Trading Company

Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

No. 1 Hard White Shavings	2.35 @ 2.40
No. 2 Hard White Shavings	1.95 @ 2.00
No. 1 Soft White Shavings	1.60 @ 1.70
No. 1 Colored Shavings	.75 @ .85
No. 2 Colored Shavings	.55 @ .60
Magazine Flat Stock	.80 @ .85
No. 1 Crumpled	.65 @ .70
Solid Ledger Stock	1.70 @ 1.80
Ledger Stock	1.30 @ 1.45
White Blank News	1.00 @ 1.05
Extra Manila Cuttings	.85 @ .95
New Manila	1.25 @ 1.35
No. 1 Manila	.60 @ .70
No. 2 Manila	.30 @ .40
Box Board Chips	.25 @ .35
Bogus and Mill Wrappers	.40 @ .45
Strictly Overissue News	.45 @ .50
No. 1 Mixed	.27 @ 25
Folded News	.30 @ .40
Common Papers	.20 @ .25

CHEMICALS

The oversold condition of most of the papermaking chemicals and the scarcity of supplies have led to a firmer tendency of values. Bleaching powder is scarce and holders are quoting 3½ cents a pound for spot lots and 3 cents for deliveries over 1915; only a moderate number of new orders has been booked owing to limited offerings. Caustic soda closed strong at 5 cents a pound and above on export lots for shipment over the balance of this year; large contracts have been booked for export lots for delivery over 1916; spot lots for domestic consumption are held at 5¼ cents and upwards for 60 percent, while contracts are being offered at 2½ cents and above for delivery of supplies over 1915, for 60 percent. Sal soda is stronger and tending upward; holders quoted .60 cents for barrelled supplies f. o. b. shipping point, while spot concentrated sold at 1½ cents and upward. Alum is scarce and firm; ammonia sorts are selling freely at 3¾ cents and upward. and potash at 5 cents and above, for ground and powdered; alumina grades are held at 1⅞ cents and upward, and at 1½ cents and above for high and low gradings, respectively. Brimstone closed steady at $22 to $22.50 a long ton, as to point of shipment. China clay is firmer, for imported sorts, owing to the scarcity of freight room abroad, which resulted in smaller stocks here; holders are asking $12 and upward, while domestic is offered at $7.50 and above, as to quantity and quality ordered respectively.

Mendelson Bros. Paper Stock Company
Packers of all grades of
PAPER STOCK
General Offices: Karpen Bldg., 900 Michigan Blvd.
Daily Capacity 200,000 Lbs.
Packing Houses and Warehouses Chicago, - - Ill.
When you want quantity and quality in stock, write us.
Long Distance Phones Harrison 2840-5557

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended October 16, 1915

WOODPULP

Perkins, Goodwin & Co., str. Greekland, Fagervik, 1,500 bs. (300 tons) dry sulphite.

Felix Salomon & Co., by same, Stugsund, 1,800 bs. (300 tons) dry sulphite.

The Bergvik Co., by same, 600 bs. (100 tons) dry sulphite, (for export.)

Felix Salomon & Co., by same, Gelfe, 6,025 bs. (1,205 tons) dry sulphite, 500 bs., (100 tons) dry sulphite for export to London.

The Bergvik Co., by same, 2,850 bs. (570 tons) dry sulphite.

Price & Pierce, by same, 1,600 bs. (320 tons) dry sulphite.

E. M. Sargeant & Co., str. Bergensfjord, Kristiania, 760 bs. (152 tons) dry sulphite.

Felix Salomon & Co., by same, 200 bs. (40 tons) dry sulphite.

Baring Bros. & Co., by same, 3,350 bs. (670 tons) dry sulphite.

Continued on page 38

PAPER MILL WIRES
OF ALL MESHES
WISCONSIN WIRE WORKS
APPLETON : : : : WISCONSIN

The better twines—those you can depend on—are
COLUMBIAN and EUREKA
COMMERCIAL TWINES
MADE FROM HEMP, JUTE AND FLAX
COLUMBIAN is our first quality—a better grade is not made.
EUREKA—second in quality to COLUMBIAN, but superior to many twines offered as "first quality."
COLUMBIAN ROPE CO.
2150-2175 Genesee St., "The Cordage City" AUBURN, N. Y.
Branches: NEW YORK CHICAGO BOSTON

HIGH SPEED STEEL tools have reduced cost of many machine shop operations.
SPECIAL ALLOY FLY BARS do the same for paper mills, and cost less to use than ordinary bars.
DILTS MACHINE WORKS, Inc. FULTON, N. Y.
BEATING ENGINES MACHINE KNIVES
We own and operate the plant formerly belonging to Taylor Bros. & Co., Machine Knife Manufacturers since 1848

J. L. & D. S. RIKER
INC.
19 CEDAR STREET, NEW YORK

BLEACHING POWDER

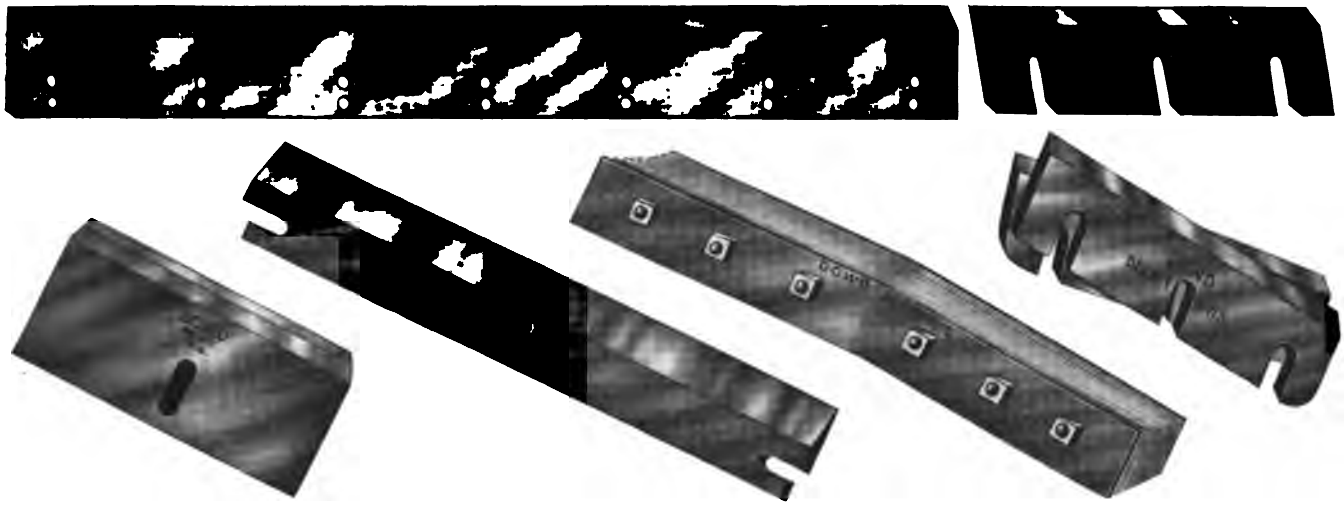
Sole agents for the United States and Canada
for the various brands manufactured by
The United Alkali Co., Ltd., England.

Sole agents for the
NIAGARA ALKALI CO.
Niagara Falls, N. Y.

The Orr Felt & Blanket Co.
PIQUA, OHIO

FELTS AND JACKETS
for Paper Manufacturers

FELTS WOVEN ENDLESS, AVOIDING TROUBLE WITH JOINS
TRIAL ORDERS SOLICITED



We manufacture all styles of Beater Engine Bars and Bed Plates, also the various kinds of knives used in paper mills, such as Chipper, Barker, Rag, Paper Cutting Knives, etc.

Your inquiries and orders are appreciated

R. J. DOWD KNIFE WORKS

ESTABLISHED 1847
BELOIT, WISCONSIN, U. S. A.

Imports—Rags and Paper Stock

Continued from page 36

Nilsen, Rantoul & Co., by same, 2,000 bs. (400 tons) dry sulphite.
Tidewater Paper Mills, str. Honoreva, Gaspe, 1,920 tons, sulphite.

MISCELLANEOUS PAPER STOCKS

Yglesias, Lobo & Co., str. Mexico, Vera Cruz, 87 bs. cotton waste.
F. T. Montell & Son., by same, Nassau, 7 bs. sisal waste.
E. Butterworth & Co., str. Strathdene, Havre, 94 bs. packing scrap, 146 bgs. rags.
A. Katzenstein, str. Cavour, Manchester, 203 bs. paper stock.
E. Butterworth & Co., by same, 40 bs. old bagging.
Mente & Co., by same, 435 bs. old bagging.
M. O'Meara & Co., by same, 140 bs. paper stock.
John H. Lyon, by same, 84 bs. old bagging.
Salomon Bros. & Co., by same, 439 bs. old bagging.
L. H. Abenheim, by same, 136 bs. old bagging.
Paul Berlowitz, by same, 4 bs. paper stock.
Castle, Gottheil & Overton, by same, 162 bs. old bagging.
American Express Co., by same, 497 bs. old bagging.
Castle, Gottheil & Overton, by same, 64 bs. waste paper.
Brown Bros. & Co., by same, 44 bs. paper stock, 20 bs. old pickers.
J. Joseph Bros. & Co., str. Egremont Castle, Kobe, 26 bs. old thread cotton waste.
Ayres, Bridgett & Co., by same, 2 bs. cotton waste.
Geo. R. Stratford Oakum Co., str. California, Glasgow, 16 coils old rope.
Castle, Gottheil & Overton, str. Edith H. Symington, Seville, 120 coils old rope.
Geo. R. Stratford Oakum Co., str. Saxon Monarch, London, 147 bs. old rope.
Salomon Bros & Co., by same, 174 bs. old bagging.

OTHER PORT MANIFESTS

AT BOSTON

Perkins, Goodwin & Co., str. Greekland, Gelfe, 1,700 bs. (340 tons) dry sulphite woodpulp.

AT PHILADELPHIA

Dill & Collins, str. Feliciana, London, 197 bs. waste paper.
W. T. Tilden & Co., by same, 43 bs. waste jute tow.
Baring Bros. & Co., by same, 85 bs. waste paper.
A. M. Patterson, str. Manchester Engineer, Manchester, 39 bs. wool waste.
American Pad and Textile Co., by same, 144 bs. old scrap bagging.
Baring Bros. & Co., by same, 381 bs. bagging and rags.
E. Butterworth & Co., by same, 145 bs. old bagging.
American Express Co., by same, 97 bs. paper stock.
John Watts, by same, 85 bs. cotton waste.
Felix Salomon & Co., str. Greekland, Gelfe, 375 bs. (75 tons) dry sulphite woodpulp.
Scandinavian-American Trading Co., str. Sweden, Gothenburg, 1,100 bs. (220 tons) dry sulphite woodpulp.

USE
Snell's Drainer Bottoms
Saves time, money and stock; clean; economical; with little care will last indefinitely. Write for sample, price.
SAMUEL SNELL CO.
HOLYOKE, MASS.

THEODORE HOFELLER & CO., Buffalo, N. Y.
Carefully Assorted Paper Stock, Rags and New Clippings
BUYERS OF
Brass Wire Cloth, Brass Screen Plate, Scrap Brass, Paper Mill Felt, Bagging and Burlap Baling, Second Hand Bags

"DRYDEN" KRAFT PULP EXTRA STRONG LONG PURE SULPHATE FIBRE
DRYDEN TIMBER & POWER CO., LTD. DRYDEN, ONTARIO

CHIPPER KNIVES

THE PURCHASING AGENT KNOWS—ASK HIM
That Chipper Knives are mighty expensive and don't last long.
WHITE KNIVES last 10 to 50 percent longer and we can prove it to you.
Wouldn't it be a good idea to get our prices?
L. & I. J. WHITE CO., 100 COLUMBIA ST. BUFFALO, N. Y.

-W- **Waterbury Felts and Jackets** -W-

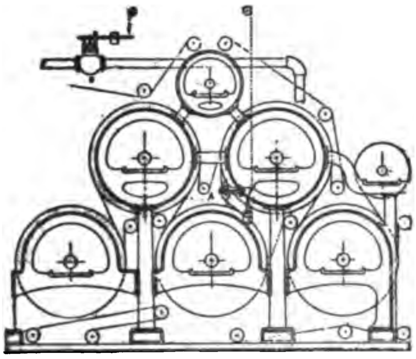
ARE MADE AT

1869 **ORISKANY, N. Y.** 1915

Waterbury Tight-Fitting Diamond -W- Jackets
are a great success on high speed machines.

H. Waterbury & Sons Co., Oriskany, N. Y.

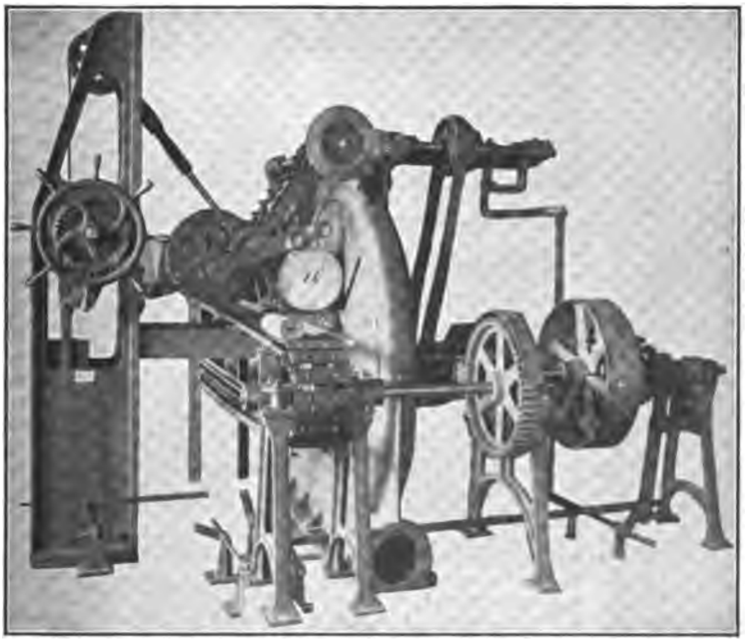
THE PICKLES DRYING REGULATOR



Reasons why you should have it on your machine are: First, it regulates the drying of paper automatically, irregularities are eliminated; second, higher machine finished papers are attainable, because it is poss ble to maintain the proper quantity of moisture in sheet, as it passes to calenders; third, mills having tried it on one machine have ordered it for all their machines. Full particulars upon application to

W. F. PICKLES, - Buckland, Conn.

The LeMoine & Schafer Barker Attachment
Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today

The Appleton Machine Co.
APPLETON, WIS., U. S. A.

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Consulting Chemists to Paper and Textile Industries

Analytical and research work. Water problems a specialty. Yearly contracts solicited for supply supervision and mill control.

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Consulting Engineers and Mill Architects—Paper, Pulp, and Fiber Mills—Hydro-Electric and Steam Power Development—Examination of Properties—Consultation Reports.

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EFFICIENCY ENGINEERING BY EFFICIENT ENGINEER

FREDERICK L. SMITH

ENGINEER

FOR PULP AND PAPER MILLS

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EDWARD A. BUSS

Mill Architect and Consulting Engineer

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New Construction Electrical Equipment
Rearrangements Economy of Operation

OFFICE OF H. B. PRATHER

CONSULTING ENGINEERS

Complete Paper, Box Board, Pulp and Coating Mills and Wood Rooms, Economies in Cost of Production, Studies and Reports on Industrial Plants, *Efficiency of Operation, Efficiency of Equipment.*

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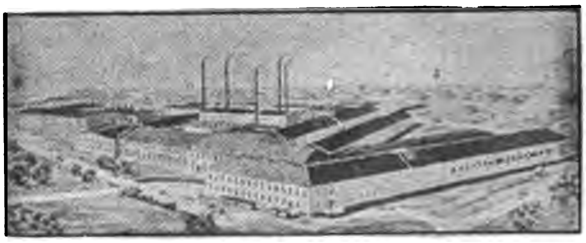

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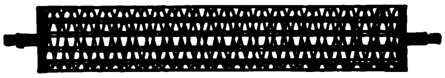

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Buyers' Guide and Information Bureau—Continued

PAPER MILL CHEMISTS

Emerson Laboratory, Springfield, Mass.
Kleiner, Dr. E. G., and Knudsen, K. Hv., New York.
Little, Arthur D., Inc., Boston, Mass.
Williams, F. M., Watertown, N. Y.

PAPER MILL ENGINES

International Process Co., New York.
Westinghouse Machine Co., E. Pittsburgh, Pa.

PAPER STOCK

Aterbury Bros., Inc., New York.
Hofeller Co., Theodore, Buffalo, N. Y.
Mendelson Bros. Paper Stock Co., Chicago, Ill.
Parsons Trading Co., New York.
Salomon, Felix & Co., New York.
Wilkinson Bros. & Co., New York.

PAPER TESTER

Perkins, B. F., & Son, Holyoke, Mass.

PAPER THICKNESS GAUGES

Perkins, B. F., & Son, Holyoke, Mass.
Ticonderoga Machine Co., Ticonderoga, N. Y.

PASTING AND SATURATING MACHINERY

Atterbury Bros., Inc., New York.

PORTABLE ELEVATORS

Economy Eng. Co., Chicago, Ill.

POWER TRANSMISSION MACHINERY

General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan, Co., York, Pa.

PULP MILL SCREENS

(Brass and Copper)

Voith, J. M., New York.

PULP THICKENERS

Glens Falls Machine Works, Glens Falls, N. Y.

PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

PUMPS

Black-Clawson Co., Hamilton, O.
Buffalo Forge Co., Buffalo, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Glens Falls Machine Works, Glens Falls, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

RAG CUTTERS

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

Atterbury Bros., Inc., New York.
Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

RECORDING INSTRUMENTS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

REFINERS

Pusey & Jones Co., Wilmington, Del.
Voith, J. M., New York.

REINFORCED CONCRETE CONSTRUCTION

Field, William T., Watertown, N. Y.

ROLL BARS AND BEDPLATES

Dilts Machine Works, Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Farrell Foundry & Machine Co., Ansonia, Conn.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

ROLLERS

Boston Belting Co., Boston, Mass.

ROSIN SIZE

Arabol Mfg. Co., New York.
National Rosin, Oil & Size Co., New York.
Vera Chem. Co., N. Milwaukee, Wis.

ROTARY INCINERATING FURNACES

Scott, Ernest, & Co., Fall River, Mass.

RUBBER PRODUCTS

Fitchburg Duck Mills, Fitchburg, Mass.

SAVE-ALLS

Glens Falls Machine Works, Glens Falls, N. Y.

SCALES

Howe Scale Co., New York.

SCREENS

Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

SCREEN PLATES

Hardy & Sons, Wm. A. Fitchburg, Mass.
Union Screen Plate Co., Fitchburg, Mass.

SCREWS

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SHEATHING PAPER

Berlin Mills Company, Portland, Me.

SIZINGS

Arabol Mfg. Co., New York.
Atterbury Bros., Inc., New York..
National Rosin, Oil & Size Co., New York.

SLITTERS AND REWINDERS

Black-Clawson Co., Hamilton, O.
Cameron Machine Co., Brooklyn, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N. Y.

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Lithograph Papers

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Dexter & Bowles, Springfield, Mass.
Oxford Paper Co., New York.
Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

SPIRAL PIPE
American Spiral Pipe Works, New York.

STEAM REGULATORS
Pickles, W. F., Buckland, Conn.

SUCTION PLATES
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

SULPHATE PULP
Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

SULPHITE FITTINGS
Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE MILL EQUIPMENT
Barker, E. R., Boston, Mass.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE PULP
Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
Berlin Mills Co., Portland, Me.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

SULPHUR
Union Sulphur Co., New York.

SULPHUR BURNERS
Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

SWITCHBOARDS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TIERING MACHINES
(In Piling Cases)
Economy Eng. Co., Chicago, Ill.

TRANSFORMERS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TRUCKS
Howe Scale Co., New York.

TURBINES
(Steam)
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

TWINES
Columbian Rope Co., Auburn, N. Y.

UNBLEACHED SULPHITE FIBER
Riordon Pulp & Paper Co., Ltd., Montreal, Que., Canada.
St. Regis Paper Co., Watertown, N. Y.

ULTRAMARINE
Heller & Merz Co., New York.

VENTILATING FANS
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General Electric Co., Schenectady, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WATER-COOLING TOWERS
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS
Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

WELDING OUTFITS
(Arc)
General Electric Co., Schenectady, N. Y.

WET MACHINES
Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES
Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks, Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wisconsin Wire Wks., Appleton, Wis.

WOOD PRESERVATIVE
Carbolineum Wood Preserving Co., Milwaukee, Wis.

WOODPULP IMPORTERS
Andersen & Co., J., New York.
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Castle, Gottheil & Overton, New York.
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Classified Advertising Page

Advertisements for this page will be accepted at the rate of 10 cents a line, each insertion, cash to accompany order. A line averages seven words.

There is no quicker, cheaper or better way of filling your wants than through this Classified Section.

Situations Wanted

EMPLOYERS WANTING HELP should send a statement of their requirements to the Labor Bureau of Paper, 117 East 24th street, New York City. Applications for work are constantly being received from men in all parts of the country.

Superintendents

WANTED—Position as superintendent. Practical, thoroughly experienced in all grades of wrapping, including water-finish, bleached and unbleached color specialties. Extra good on colors. Address Technical, care of Paper.

EXPERIENCED SUPERINTENDENT desires position in that capacity in a paper mill. Will consider position as assistant. Started in paper trade at the bottom and has been engaged in that trade for twenty years. Has been tour boss and night superintendent with good records. Sober and reliable. References if desired. Write Assistant, care of Paper.

Head Finishers

EXPERIENCED HEAD FINISHER at present unemployed would like to get position. Experienced on tissues and light and heavy papers. Married; reliable. When writing please state wages, number of machines, etc Address E. C. B., care of Paper.

HEAD FINISHER perfectly sober and reliable wants position. Has had considerable experience on supercalender book, manilas, dry finish wrappings, bonds, flat writings etc. Is practical supercalender man and has had some experience on tissues. Could qualify as mill salesman or assistant superintendent. Age 37; married. Can furnish excellent references. Address Finish, care of Paper.

Chemical Engineers

CONTROL CHEMIST AND ENGINEER—a graduate of Massachusetts Institute of Technology, class of 1913 desires position. Has had two years experience in the testing and control of paper and sulphite mill supplies and products. In addition is a good acid maker and cook. Moderate salary; good reference. Address F. H., care of Paper.

CHEMIST AND CHEMICAL ENGINEER, a graduate from the Royal Institute of Technology, Sweden, is desirous of locating in a Western mill. Has had long and varied experience in the United States as chemist and engineer of tests, and is theoretically familiar with the manufacture of paper and pulp. At present employed. Can furnish excellent references. Address Graduate, care of Paper.

Chemists

CHEMIST, B. S.—Desires to obtain position as superintendent or general manager of paper mill making high grade rag paper. Eastern university graduate. Has had six years' practical experience in making paper, papeterie, boxes, etc., and an opportunity to study the art of papermaking. At present employed as superintendent in a well known paper manufacturing concern. Age 26 years and married. Correspondence with reliable, well rated concerns invited. Best of references will be furnished. Write B. S., care of Paper.

CHEMIST AND PAPERMAKER—Young man, technical graduate, two years on microscopical, physical and chemical testing of pulps, papers and mill supplies; three years' experimental work on semi-commercial basis, on cooking, bleaching and beating of papermaking fibers, old and new. At present running experimental plant on semi-commercial basis. Would like position as chemist or assistant to superintendent. Address in confidence Chemist and Papermaker, care of Paper.

Mechanical Engineer

MECHANICAL ENGINEER AND DRAFTSMAN desires position. Ten years experience in paper machinery shops, paper and pulp mills. Mill preferred. Address J. E. H., care of Paper.

Machine Tender

MACHINE TENDER, 40 years of age, experienced on book and coating papers, desires permanent position; Fourdrinier or Harper machine; references. Address—Harper, care of Paper.

Boss Machine Tender

BOSS MACHINE TENDER would like position in mill in the middle west. Either day or night job. Experienced in all grades of paper. Address Boss, care of Paper.

Situations Vacant

PAPERMAKERS OUT OF WORK, machine-tenders, beatermen and millwrights out of a position, are invited to send their qualifications, requirements as to salary, etc., to the Labor Bureau of Paper, 117 East 24th street, New York City. Openings now exist for several workers.

Draughtsman

WANTED—Paper's Labor Bureau has an application for a draftsman who has had good experience in paper mill work and is competent to take charge of any work in the mechanical end of a large plant. Those qualified to fill a position of this kind should send particulars of experience, etc., to Rogers, care of Paper.

Chemical Engineer

WANTED—Energetic chemical engineer with knowledge of glue, glycerine, glycerine substitutes and paper. State age, experience and salary expected. Address 663 care of Paper.

Order and Routing Clerk

WANTED—Competent order and routing clerk in a western Massachusetts mill making writings and specialties. State full experience and salary wanted. Address Clerk, care of Paper.

Millwright

MILLWRIGHT, with knowledge of electric motors, generators, etc., is wanted by a paper mill in the East. Correspondence with experienced men only, who are able to furnish excellent reference is solicited. Address J. H., care of Paper.

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SUPERINTENDENT, experienced chiefly in the cooking of hard woods and the handling of them in paper, is desired by a paper mill in New York State. Should be a technical man familiar with the utilization of hard woods in pulp, and who is able to produce novelties in paper from sulphite and groundwood, or a mixture of these in connection with waste papers. Write stating experience and qualifications to Hard Woods, care of Paper.

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BACK-TENDER, experienced, is wanted in a mill in a small village in the East. Cylinder machine on roofing felts only. House for man with family; also boarding house. Must be strictly sober and reliable. Excellent opportunity for the right man. Write L. M., care of Paper.

Machine Tenders

OPPORTUNITY for machine tender in a mill in a small eastern village. Cylinder machine on roofing felts only. Must be experienced, sober and reliable. Address Eastern, care of Paper.

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FOR SALE—Three Matthews Patent Compensating Winders—Four shaft—for 128" machine. Big bargains. Write Champion Fibre Company, Canton, N. C.

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A WEEKLY TECHNICAL JOURNAL FOR PAPER AND PULP MILLS

Published by PAPER, Inc.
117 East 24th Street, New York

OCTOBER 27, 1915

Vol. XVII
No. 7

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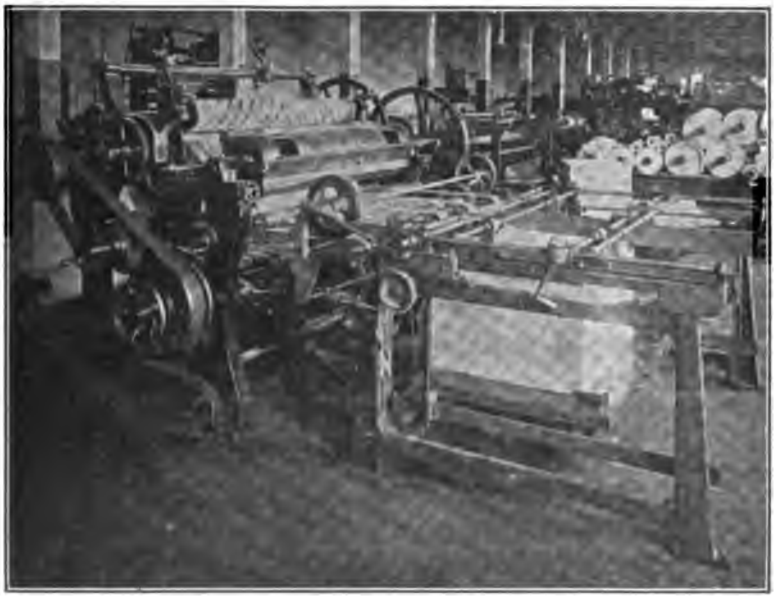

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Washington, D. C.
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For TEXAS, OKLAHOMA and ARIZONA business refer to Southwest General Electric Company (formerly Hobson Electric Co.), Dallas, El Paso, Houston and Oklahoma City.

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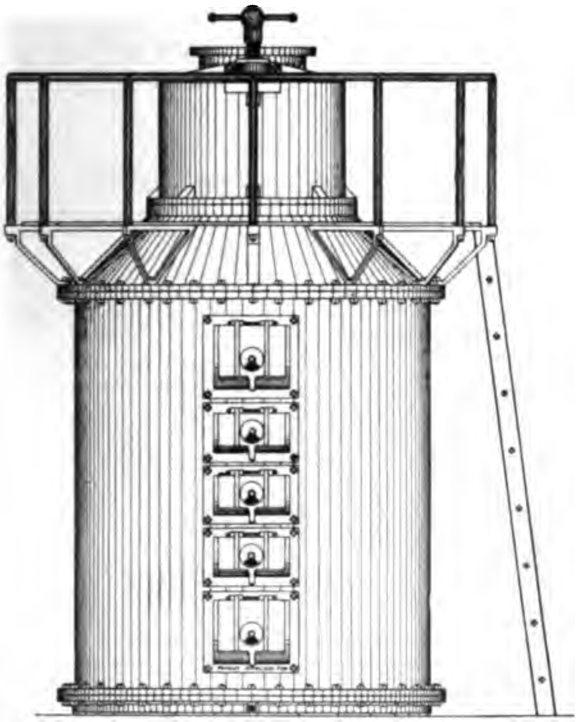

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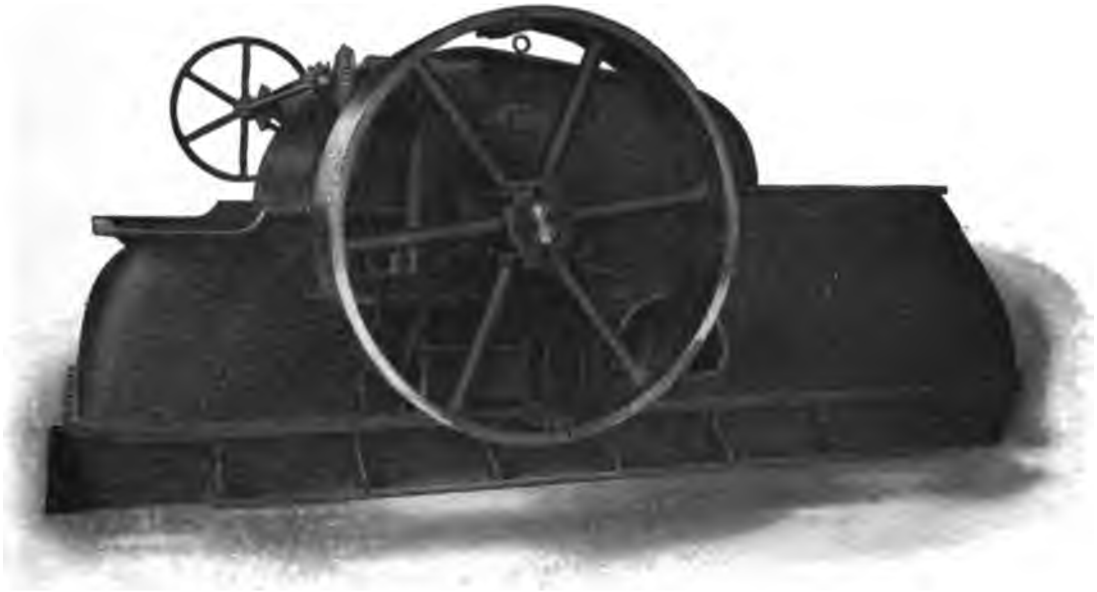

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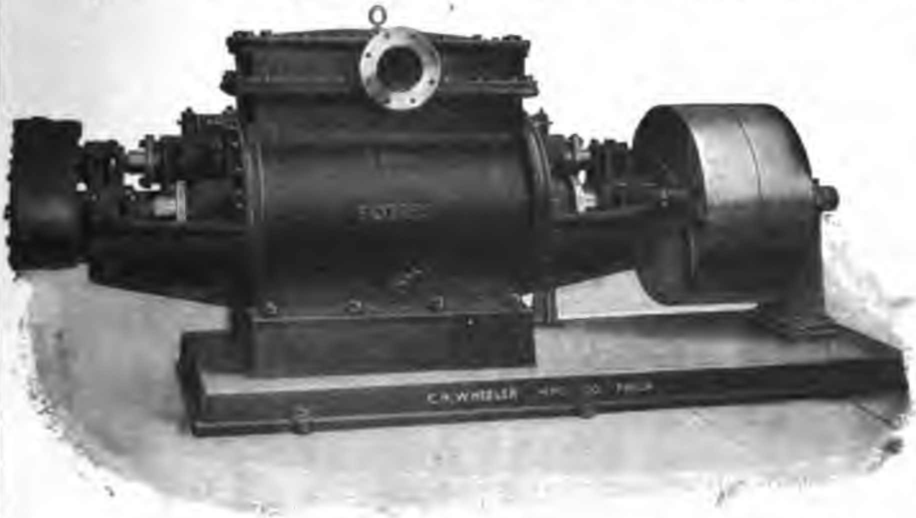

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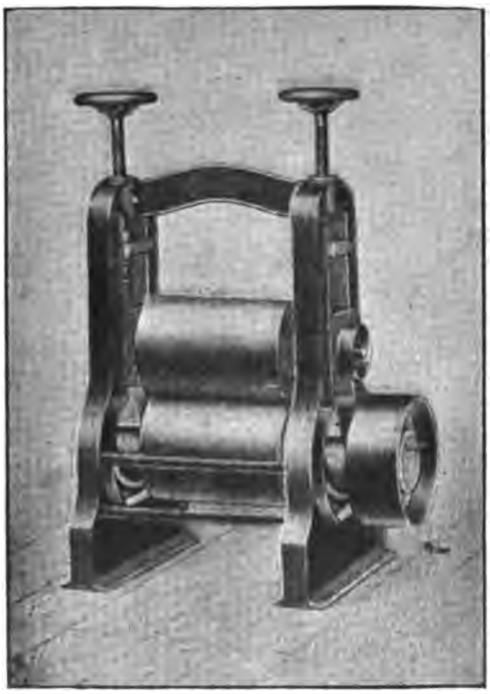

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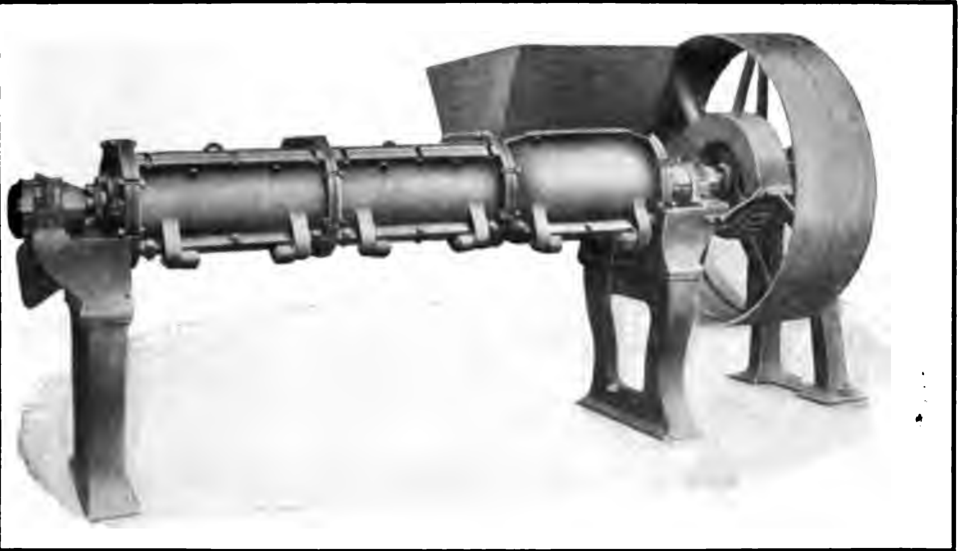

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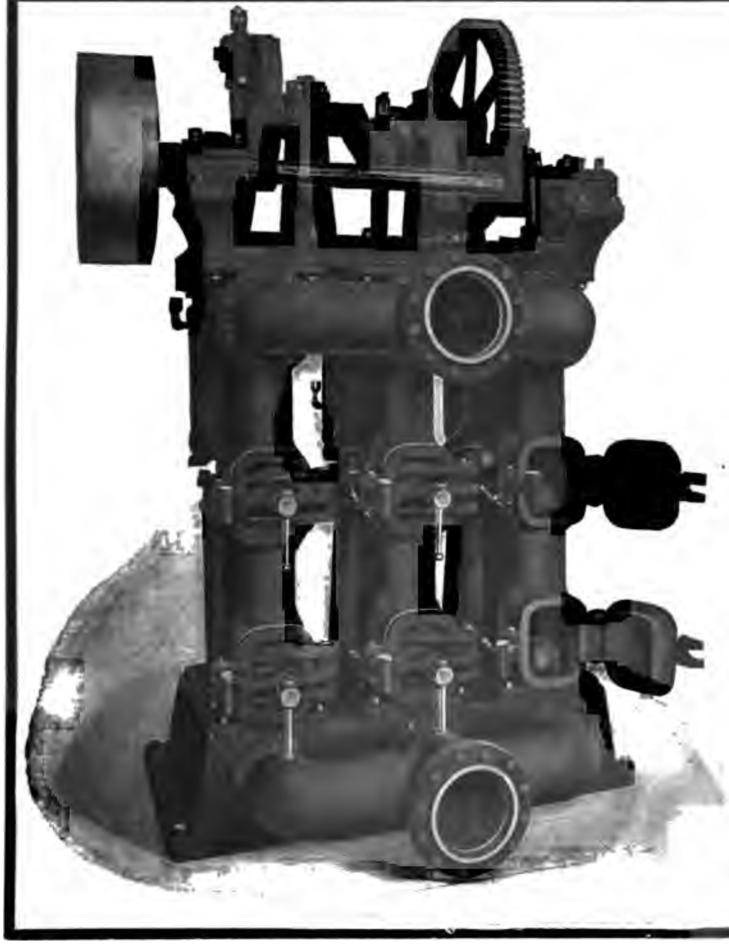

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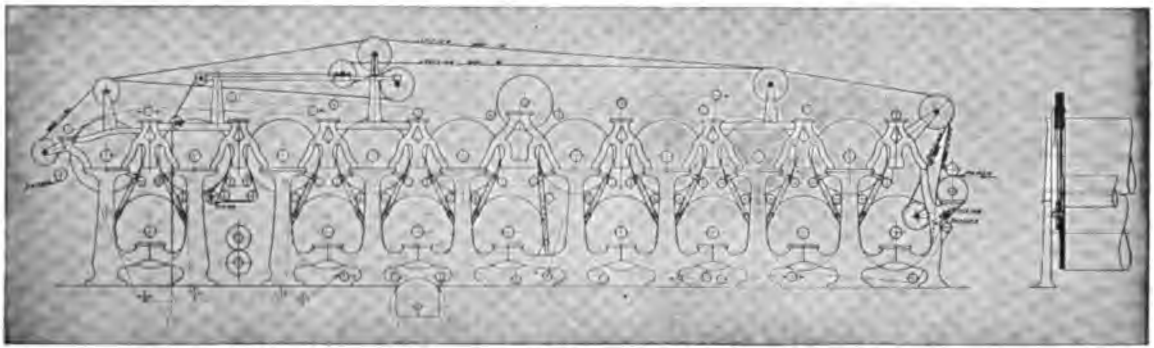

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Vol. XVII OCTOBER 27, 1915 No. 7

Common Sense on the Dyestuff Question[1]

Some Misconceptions Cleared Up and the Needs of a Coal Tar Dye Industry Set Forth

By J. MERRITT MATTHEWS, Ph. D.,

Consulting Chemist to the Textile Industries, New York

THE chemist has long been accustomed to misconceptions by the lay mind of things chemical, but in the recent dyestuff propaganda, these misconceptions do not seem to have been confined solely to the layman, but appear also to have extended to many within the profession itself.

The person most interested in the dyestuff question is probably the textile manufacturer, since a large proportion of his business is dependent on an assured supply of dyestuffs suitable to his requirements, yet it is a rare exception to find a textile manufacturer who is at all acquainted with the nature of the dyestuff problem even in its simplest form. He has a hazy notion that dyestuffs are made from coal tar, but this fact generally comprises the entire extent of his information. To illustrate the naivety of the lay mind in this respect, shortly after the outbreak of the European war and when the importation of dyes was suddenly stopped and everything was in a chaotic condition of uncertainty, a large textile manufacturer in New England telegraphed me to come to Boston. When I had a conference with him I found he had sent for me to arrange for the manufacture of certain dyestuffs he needed; he explained he had a small building at the mill which could be readily adapted to this purpose, and he had already arranged for an option on several tons of coal tar, and it was up to me to show him how to extract the dyestuffs from the coal tar! It required considerable explanation on my part to convince him of the impracticability of the scheme, and even to the present day I think he has a lurking idea that I advised in this manner simply because I was afraid to tackle the job.

I suppose there are many textile manufacturers in the same category as my friend just referred to, who really believe they can put up a small dye plant in their back yard for the protection of their required colors, their only trouble being that they cannot find any chemists of sufficient capability and experience to carry out the work.

Both the technical journals and the daily papers have published so much during the past year concerning the dyestuff situation that there has been brought about among the public a condition which might properly be termed "dyestuff dementia," and as a result, a wave of scientific insanity seems to have swept many would-be dyestuff experts and inventors out into the sea of folly. Several months ago, one of these inventors who firmly believed he had at last discovered the secret of the German dyestuffs, and had solved the problem of the American dyestuff industry, came to my laboratory with a "sulphur black" he had synthesized. A company was already being organized to exploit it commercially. I was told all the details of its manufacture had been carefully worked out, that it could be manufactured very cheaply—in fact so cheaply that German sulphur black even at normal prices could not compete with it; its composition of course was a profound secret. I was given a sample of this Great Invention of the Age and was asked to test out and report on its dyeing properties. As I was rather well acquainted with the gentleman concerned and knew him to be otherwise sane and normal, I was inclined to take his discovery seriously and went about its investigation. How grievously was I disappointed! The so called sulphur black produced only a slight dirty stain on dyeing, and its chief component turned out to be simply black sulphide of iron. The inventor had received the information that sulphur black was made by fusing something with sodium sulphide and sulphur; he also observed the fact that iron filings fused with sodium sulphide and sulphur produced a black compound which gave a good permanent black on his hands; hence the secret of the sulphur black dyestuff was solved.

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[1] An address delivered before the Society of Chemical Industry on Friday, October 22, 1915.

Like most chemists interested in this question I have followed with mingled surprise and chagrin the propaganda advanced by certain "experts" in the daily papers. At first many textile manufacturers placed considerable confidence in these reports and they were lulled into a sense of security in the belief that in a short time all the dyestuffs needed in American industry would be manufactured in this country by new processes much in advance of the antiquated German methods. So radical and preposterous, however, were many of these schemes that even the most hopeful manufacturers began to exercise their common sense, and to realize that the dyestuff problem was not to be solved by any such method of procedure. Fortunately most of the textile trade journals preserved a sane poise in the matter and their editorial criticisms exposed the fallacy of many of the irrational schemes advanced. In this connection I might say there was one very hopeful dyestuff proposition which was communicated to me privately, and which unfortunately was not brought to the attention of the Government's press bureau. You all know that red is a widely employed color and that naturally red dyes are in great demand and these dyes are now very scarce and bring a high price. A gentleman in New England owns large cranberry bogs and he was aware of the fact that the cranberry contains a large quantity of a beautiful red coloring matter, and any housewife in the land will vouch for the fastness of this color when cotton or linen fabrics have been accidentally dyed with it. This gentleman conceived the novel idea of extracting the valuable red dyestuff from the cranberry without interfering with the edible qualities of the luscious berry. This purely American dyestuff was to be know as Cranberry Red and is doubtless destined to take a place of equal rank with that other American dyestuff known as Osage Orange which has been widely heralded by the Government through its bulletins and press reports.

To return, however, to the realms of common sense! Dyestuffs are well known bodies and in general are of definite and well established chemical constitution. The products from which they are made and the general methods of their building-up or synthesis are also well known and clearly established; and to make these dyestuffs, these starting products must be employed and these methods must be adhered to. Radical methods proposed for the production of dyestuffs, either from newly conceived crude materials or by darkly hidden secret chemical processes, must generally be taken as being the hare-brained conception of ignorant enthusiasts, or the illegitimate promotion of straightaway fakirs. The only safe way to proceed in the manufacture of dyestuffs is to carefully select those products which it is considered desirable to make, determine the various intermediate materials which it is necessary to use and to proceed about the intelligent manufacture of these. At the present critical time it is folly to endeavor to prepare dyestuffs by new and untried methods of procedure. From a chemical point of view the making of the actual finished dyestuffs themselves is not in general a difficult or complicated problem, provided the proper so called intermediates are available. Almost any college student with a fair knowledge of chemistry, for instance, can prepare the dyestuff Chrysoidine with little difficulty and even obtain a pure product and a good yield, if he is provided with the necessary aniline and metaphenylenediamine. But, if my intelligent student is simply given the necessary quantity of benzol as a starting point, and had to first make his aniline and phenylenediamine, I am inclined to the opinion that the chrysoidine resulting from his first attempts will be neither of very good quality nor of very high yield. There are a number of well known and largely used dyes, such for instance as Victoria Blue, which require the use of Michler's ketone in the course of their manufacture. Michler's ketone is quite an aristocrat among dyestuff intermediates as it rejoices in the high-sounding name of tetramethyl-diamido-benzo-phenone. Given a good supply of Michler's ketone, it is comparatively simple to make quite a number of dyestuffs, but like the proverbial rabbit pie, you have first to catch your rabbit before you can hope to bake your pie.

In my opinion, the crux of the entire question as to the establishment of an American dyestuff industry lies in the economical production of the intermediates. The development of our by-product coal tar industry both from gas tars and coke tars apparently assures us a good supply of raw materials or crudes such as benzol, toluol, xylol, naphthalene, and anthracene. Of course, all these products are at a very abnormal price at present owing to the demands for high explosives, but when this demand lessens these prices will readjust themselves to the conditions of the dyestuff and pharmaceutical industries. But what the dyestuff business needs in order to get on its feet is a supply of the proper intermediates such as aniline, phenol, alpha and betanaphthols and naphthylamines, and their various sulphonic acids; benzidine, dianisidine, sulphanilic acid, Michler's ketone, phosgene gas, naphthionic acid, dimethylsulphate, dimethylamine, diphenylamine, toluidine, tolidine, benzal chloride, benzaldehyde, salicylic acid, etc. These are the products that form the backbone of the industry and their production must be undertaken by organizations capable of commanding large supplies of the coal tar distillates, as well as sulphuric acid, oleum of high strengths, nitric acid, caustic soda, chlorine, acetic acid, etc., and who are conversant with the technique of such processes as sulphonation, nitration, caustic fusion, reduction, methylation, steam and vacuum distillation and other related operations. The production of intermediates will be a profitable outlet for the coal tar distillates and for the acid and caustic soda plants; it will also, on the other hand, furnish the possibility for the economical production of dyestuffs and related pharmaceutical products in this country in time of peace and for the production of high explosives in time of war.

Any scheme for the establishment of an American dyestuff industry with a view of making us independent in this respect of other nations, in my opinion will be futile if it does not first of all insure the firm and permanent establishment of the manufacture of the various needed intermediates. If a supply of intermediates is assured, the manufacture of dyestuffs follows as a matter of course; on any other basis it will be a hybrid industry, as it has been heretofore; its existence will be precarious and uncertain.

As to the proper means of fostering and protecting these industries in their infancy and upbuilding, this is a problem worthy of the closest study by our political economists. Most certainly a tariff protection in one form or another will have to be given. Personally I am inclined to favor a high specific duty on both intermediates and on the dyestuffs derived therefrom, with more or less ad valorem duty to meet the conditions of each case. Recurring to my former argument, it would seem to me to be foolish to place a high tariff on the dyestuffs alone, for unless these intermediates are manufactured in this country as well as the dyestuffs themselves, we will never be independent of foreign countries, nor can we hope to establish any kind of normal dyestuff industry here until we have first established a normal and efficient manufacture of these intermediates. At the present time we hear a great deal of talk and discussion concerning military preparedness for defense against the possibility of foreign attack. Of course, there are many different phases of this question to be considered, but gentlemen, from a chemical point of view we must realize in its fullest significance the all-important fact that unless our Government in some manner or other develops a well established and extensive industry in the coal tar intermediates, all our schemes for military preparedness will be of no avail. Well trained men and the latest types of artillery will be merely idle machines without the necessary high explosive ammunition to render them operative. And the high explosive supply is based in very large degree on the coal tar immediates.

The time factor in starting the manufacture of these chemicals is an important one—at the present moment it is far more important than the efficiency factor. At the present time the factories starting up for the production of coal tar products are in reality emergency measures and their very foundation is based on the fact that they are taking advantage of a very abnormal trade situation. I know there are many textile manufacturers who feel that all these factories of coal tar products have a sort of strangle-hold on the situation and are forcing out of it all the profits they can. But there is another side to be considered,—these factories which are now making some dye products as well as other factories which are under construction or projection, are in their turn paying abnormally high prices for all their raw materials, for their apparatus, for their machinery, for their labor. The financial interests involved are taking grave risks, for no one positively knows when the war will cease and just what protection the new industries will have after the war, and even if sufficient protection is obtained its continuance for any length of time is a grave uncertainty.

There is also another factor from a manufacturers' point of view—and one which the layman is apt to overlook. In the manufacture of any article, and especially in the foundation of a new enterprise, there is always an involved manufacturing organization and technique to be built up before the article in question can be produced efficiently and perfectly. There is not only a *science* in manufacturing, but there is also an *art*, and this latter is only evolved out of practical experience and in the handling of large quantities of materials on a commercial basis. It involves the training of workmen and foremen to do the right thing at the right time—to keep processes and operations moving along continuously with the minimum expenditure of labor and materials.

If, for example, I ask an organic chemist to look into the processes for making methyl violet, he can furnish me a very good scheme on paper, detail the processes of making the various materials needed and final product desired; he can carry out methods in the laboratory and no doubt produce for me a sample of a few grammes of methyl violet. In connection with suitable engineers and constructors we can devise and install the necessary apparatus for making a ton of methyl violet per day. Now to the layman the problem is solved, all that is necessary to do is to go ahead and turn out a ton of methyl violet per day. But to any one who has had any experience in manufacturing, the problem may have been more or less worked out and disposed of—then comes the *art* of doing it, involving innumerable factors that the scientist has not yet classified in his organized and exact knowledge, and this art can only be acquired in time and in patience. Under present conditions, of course, dyestuffs can be produced at absurdly high costs and will find ready buyers, so the enterprise is sufficiently attractive to lead both money and manufacturers into the field. Given a couple of years of continuous manufacturing of staple products and our American factories will have acquired, no doubt, as fine an art of manufacturing such dyes as the German or Swiss factories and *other things being equal* should be able to sell on a competitive basis. It is in the equalizing of the other factors, the labor, raw materials, methods of selling and competition, etc., that our political economists, our business men and our Government must help.

But outside of any industrial connections or the fostering of any special industry, for its own interests in preparedness for selfdefense our Government should see to it that a suitable line of coal tar intermediates is manufactured in this country free from foreign affiliations or control. In whatever way this may be brought about—by tariff, by antidumping laws, by subsidies or by whatever means, let it be the duty of our Government to see that such an industry is established—and then the users of dyestuffs in whatever industry they may be, may rest assured that the manufacture of the finished dyestuffs will soon be an accomplished fact in this country.

Technical Training Necessary

FOR the past fifteen years there has been a gradually increasing realization that, in order to compete with other nations and to overcome our wasteful methods, we would have to develop the technical side of the industry, as we could no longer rely upon the great advantages of abundant and cheap raw material which we had hitherto enjoyed. Since that time, something over a dozen years ago, according to the *Paper Trade Journal* of October 7, the leading companies in the industry have gradually paid more attention to the technical side of papermaking, and in consequence have established laboratories, not only for the testing of the raw materials which they bought in the open market, but also for the testing out of formulas of their various processes, chemical as well as mechanical.

By bringing together all these forces which relate to the technical side of the industry, the Technical Section of the American Paper and Pulp Association has taken an important step towards putting the industry on a par with that of Germany, and will do much toward improving conditions in our mills, reducing the cost of operation and perfecting the product. All these things will make for the betterment of the paper industry as a whole, as the information of all will be exchanged, thus improving conditions in general.

The open meeting of the Technical Section, held in New York recently, ***might thus be termed the beginning of a new era in the American industry*** in which science will take the lead and be our chief resource, instead of abundant raw material and quantity methods which have heretofore characterized the American papermaking industry.

Color Manufacture in the United States[1]

The American Dyestuff Industry from the Manufacturer's Viewpoint

By J. F. SCHOELLKOPF

Of the Schoellkopf Aniline and Chemical Works, Inc., Buffalo, N. Y.

OF all the industrially prominent countries the United States is doubtless the one which has been most successful in the manufacture of products of universal use. For articles of this class the large home market, cheap transportation and great consuming capacity of the American people, permits the construction of manufacturing plants on an enormous scale, where machinery takes the place of hand labor, so that in spite of high wages, the actual labor cost of such articles is frequently less that the labor cost on the same articles when produced in countries with a more limited consumption. I call attention to the fact that at the last revision of the tariff, the steel corporation stated that they had no objection to a lowering of the duty on their products; the automobile industry, which manufactures on a scale unheard of in any other country, even before the present war was exporting its product to every corner of the globe; other articles in point are agricultural machinery, sewing machines, typewriters, leather, boots and shoes, and to mention a few chemical products, wood alcohol, acetate of lime, caustic soda, etc.

Unfortunately, the manufacture of synthetic dyestuffs does not lend itself to such mass production. The estimated annual consumption of aniline colors in the United States is about 40,000,000 pounds, of an approximate sales value of $15,000,000. While this amount is quite large when considered by itself, it is small when compared with the products enumerated above and from the manufacturer's viewpoint dwindles to small proportions indeed. I refer to the fact that while the producer of caustic soda manufacturers but one article, the aniline color manufacturer produces many. The single process for making coal tar dyes has not yet been invented and never will be, nor can this industry get along with a single raw material as was suggested in a recent press report from Chicago, which explained the shortage of dyestuffs by the fact that Germany, being unable to obtain any more blood from the Chicago packing houses, was thus deprived of her most needed raw material for synthetic dyestuffs.

According to Schultz's Tables, 1914 edition, there were on the market at that time no fewer than 930 synthetic dyestuffs, being chemical individuals, not mixtures, or 1,000 in round figures, as there are a number, whose constitution the color factories refuse to divulge. Of these, there are no two colors, whose process of manufacture is exactly the same. There is as much difference in the manufacturing process of sulphur black and direct black, though both are used for similar purposes, as there is perhaps in making soap and woodpulp. And the same applies to auramine, methylene blue, fuchsine, alizarine, nigrosine, chrome black, lithol red and others. Going back to the possible annual production in America of 40,000,000℔., and assuming that the trade demands all of the 1,000 products now on the market, this would necessitate, so to speak, 1,000 individual minature factories, each having a capacity of about 40,000℔. This, of course, would not actually be the case, for among all colors used, there are about a dozen or so, which constitute about 75 percent of this country's consumption, including such colors as sulphur black, direct black, acid black, chrome black, nigrosine, indigo, auramine, benzo-purpurin, patent blue, paper blue, alizarine, fuchsine and phosphine. Assuming this to be approximately correct, that would leave ten million pounds for the remaining 988 dyestuffs, or an average of about 10,000 ℔ for every little factory. It is obvious that to produce so small a quantity, the manufacturer could not run his factory the whole year round, and he is compelled, therefore, to rotate, that is, he must manufacture a number of different colors in the same installation in succession, each change necessitating extra labor in clearing the apparatus, and requiring more or less alterations to same. The monster European factories, having a very much larger production, do not suffer from this disadvantage to nearly the same extent.

Their larger output of individual colors is also an advantage in other respects. According to their latest report, the Farbwerke Hoechst, Germany, had in their employ more than 300 scientifically trained chemists. Allowing 100 of that number for their inorganic, analytical and research work, that would leave 200 to look after the manufacture of about 500 colors, as the concern named probably does not make more than 500 of the dyestuffs mentioned in Schultz's Tables. One chemist, therefore, has on the average no more than two or three colors in his direct charge, and this continuously during the whole year.

Every chemist, who has had actual manufacturing experience, will realize that only by being in daily contact with the product of his manufacture can he attain that efficiency which enables him to detect at once the slightest inaccuracy in his processes, and to turn out a product always uniform in quality and yield. On the other hand, when called upon to change from one product to another every few months, as is the rule in American color factories, slight details in the processes may have escaped his mind or other conditions may have changed, causing loss in yield and increasing generally the cost of production.

Corresponding to the variety of processes, that are carried out in a dyestuff factory, a great variety as well as a great quantity of chemicals, inorganic as well as organic, are used. Almost all of these, with the possible exception of high percent anhydrous sulphuric acid, can be obtained in this country in normal times in sufficient quantities and at fair prices.

A very important part in our industry is played by the so called "intermediate" products, which have lately been mentioned so often in the daily press, and on which subject I. F. Stone has delivered a very able address on the occasion of the National Exposition of Chemical Industries. Most of these "intermediates" have been imported from Europe, principally Germany, and I confess that at recent tariff revisions, I have sought to have these placed on the free list. This has, doubtless, created the impression in some quarters that the manufacture of these products was particularly complicated, difficult and practically impossible to produce. Nothing, however, is farther from the truth. Many of our most important intermediates—I will mention nitrobenzol, aniline, alphanaphthylamine, betanaphthylamine, betanaphthol, metanilic acid, sulphanilic acid, naphthionic acid, benzidine—are made by simple processes. You all know that benzol on nitration wth so called mixed, that is, nitric-sulphuric acid, yields nitrobenzol, and washing and distilling the product will yield practically chemically pure material; on reduction with iron aniline oil is formed and purified by simple distillation. Very similar to this is the process of making alphanaphthylamine, substituting naphthaline for benzol. Betanaphthol, which is used also in great quantities for the so called "Para-red," is made by sulphonating naphthaline to the so called betamonosulpho acid; this is isolated, melted with caustic soda, and the betanaphtol then separated with acid and on distillation yields again a practically c.p. product. In fact, before the war and while these intermediates were on the free list, we have found it cheaper to manufacture several of them in our own works rather than import them, duty free, from abroad. However, in other cases, some of these coal tar derivatives consume such large quantities of chemicals, *i.e.*, mostly mineral acids, which in part cannot be obtained at all, or partly at a materially higher price than in Germany, and furthermore, the yield is comparatively small, or in other words, the amount of labor to produce a pound is so much greater that we could not compete with the German factories and had to import those materials.

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[1] An address delivered before the Society of Chemical Industry on Friday, October 22, 1915.

Even the large German factories, it is safe to say, do not manufacture all of their own intermediates; some of them constitute only a very small part of a given dyestuff, and I am sure, can only be made successfully by factories that specialize in them, and do not entirely depend on their own consumption.

As I mentioned before, the process of making dyestuffs is in no two cases exactly the same. This is the cause of a large variety of complicated machinery, as is, in my belief, not used in any other industry.

Another peculiar feature of the dyestuff industry is the fact that it is subject, to a great extent, to the change in style, more so if it depends only on the home market. While, say, an iron furnace to take care of an increased demand, need only add more units of the same kind, a color factory is, even in normal times, confronted with the falling off of sales of certain shades, while others enjoy a particular boom, necessitating a constant shifting of manufacturing and a correspondingly great, let me say, flexibility of apparatus.

From the aforesaid, it will be seen what an important position falls to the engineering force of a color factory. The Badische factory in Ludwigshafen alone is said to employ over two hundred engineers with college training.

Altogether, you will have seen that the manufacture of synthetic dyestuffs is a very intricate one, at the same time, highly interesting, not only from the chemical, but also from the engineering viewpoint.

It is deplorable that, as I mentioned already, so many reports have been published in the papers, which only tend to mislead the public, and worse yet, the Government, about the problems, which confront the American manufacturer of dyestuffs.

We must not forget that Germany, of course, is by far in the lead, and there are quite a few colors, which the German manufacturer has patented in this country which, consequently are beyond competition, but the inventions in this line, of the last few years, have had by no means, the revolutionizing effect of the older inventions like the Hoechester ponceaus, which replaced cochineal; of alizarine, which replaced madder; of indigo, which put the natural product out of business, or of acid and direct blacks, which compete successfully with logwood. In spite of these latest inventions, however, the consumption of the older colors seems to increase steadily. I also doubt that there is any great invention to be expected, which would interfere materially with the older colors. This does not mean that research in the line of finding new products should be abandoned altogether. With due cooperation between University and Industry, as has been the case in Germany for many years and to which is due, to a large degree, the greatness of the German dyestuff industry, there are many promising problems yet to be solved, but just as much, or perhaps more, has been accomplished by working in the older field, in consequence of which our industry has been able to lower their prices from year to year in contrast with almost all other industries, which, in proportion to the rise in wages, have had to raise their prices if they did not choose to lower the standard of their goods instead.

Gentlemen, viewed from a manufacturer's standpoint, the present condition of the aniline color industry in America is a most trying one, owing to the difficulty in securing adequate supplies of all kinds and even the ordinary heavy chemicals, such as sulphuric and nitric acids.

In closing, I would like to summarize the needs of the industry after we return to normal conditions. We will require:

(1) A plentiful supply of all chemicals, including the so called heavy chemicals. All of these will, doubtless, be obtainable from American sources;

(2) All basic raw materials derived from coal tar in practically pure form, such as benzol, toluol, xylol, naphthaline, anthracene, carbazol, and carbolic acid. Some of them are obtainable now, in fact, the war has greatly stimulated the manufacture of a number of these products, unfortunately, mostly for use in explosives. But, as the manufacturers are reaping enormous profits on these products during the war, they will be able to write off their plants, and after the war, should be in a position to furnish an ample supply of these chemicals for color purposes.

(3) We need intermediates. Very few of these are made at the present time in this country for reasons I have outlined before. But even the many that are missing, present no serious problem from the manufacturer's viewpoint, always keeping in mind that there must be found a way to offset the higher manufacturing costs. In frequent conferences with large chemical concerns intending to take up the manufacture of intermediates, we usually found no willingness to enter into their manufacture if we could not guarantee to take, say, upwards of fifty tons or so annually of each product.

(4) We need the cooperation of the American consumers, which I regret to say, was extended to us in the past only to a very limited extent. I believe, however, the war has taught them a lesson, which the present generation will hardly forget.

(5) And most important of all, we need legislation, which will help to create the industry by first creating conditions that will make it profitable as every manufacturer is entitled to a reasonable return on his investment.

If these conditions are fulfilled, I venture to say that American mills will soon be using American aniline colors, and any possible slight increase in cost will be more than offset by the assurance that they will be protected absolutely against any future recurrence of the present calamitous situation.

Principles of Power Plant Recorders

Professor Smallwood Discusses the Characteristics and Construction of Leading Types

IN a series of articles contributed to the *Engineering Magazine,* Prof. Julian C. Smallwood, of Syracuse University, discusses the underlying principles of power plant recorders, presenting the general characteristics and mechanical construction of leading types of recording instruments. In the initial article he considers coal meters, water-flow meters and steam flow meters. Later paper will deal with flue-gas recorders, Blonck meters, thermometers, pyrometers, gauges, tachom-continuous indicators and the records themselves.

In his introductory article Professor Smallwood asks the reader to consider the cases of three men making daily expenditures. The first buys without asking the cost and pays without counting the change. The second inquires into cost and quality, but does not note them, and consequently is at a loss afterwards to correlate his facts. The third not only observes keenly cost, quality, and returns, but records them completely so that he may analyze them in their entirety for future guidance.

These three cases are comparable, in a small degree, to the power plants using no precise measuring instruments, to those using indicating instruments, and to those using recording instruments. The first are clearly doomed to economic extinction, although, unfortunately, some are still undergoing the painful process of death by decay. The second exist as weaker sisters, strong enough when the conditions are not too severe. The third will prove an example of the survival of the fittest.

There are now available autographic instruments making it possible at any and all times to analyze the action of both units and operatives.

Depending upon the combinations of meters employed, investigations of the following may be made:

1. Net steaming capacity of boiler plant or separate units.
2. Over-all economy of boiler plant or separate units, or of engine room, or entire plant.
3. Boiler and furnace wastes.
4. Steam wastes due to leaks in piping, etc.
5. Performance of auxiliaries.

In addition to these services there should be listed what is perhaps the most important function of metering apparatus—namely, the regulation possible from a study of their indications, resulting in the maintenance of uniformity of operation, the lack of which makes waste.

COAL METERS

These are useful, in conjunction with wattmeter or steam flow meter records, for determining results of over-all economy, by the comparison of which the most economical fuel, grates, etc., may be ascertained. They have two other important functions, not performed by other than this class of meter, which are the checking of the coal dealer's accounts and the determination of grate and cleaning losses. Beyond this it may be said that coal meters have a phychological effect upon operatives, by virtue of which a spirit of competition is engendered which is distinctly beneficial toward economy.

Coal and water or steaming records should be regarded as the grand totals of the debit and credit accounts of the boiler room, a perusal of which, exclusive of detailed items, would not result in an increase of the balance. They should by all means be known for the purpose of comparison and daily record, but coal meters ma ynot be used for hourly regulation since any waste in the matter of coal consumption occurs well after such a meter discloses it.

The best practice in regard to coal weighing is to make a time record of the coal supplied each boiler, although some plants record only the total quantity consumed daily by all. Grate and cleaning losses may be ascertained at intervals by weighing the total amount of refuse from an individual boiler (without the knowledge of the operatives), during twenty-four hours, and comparing these weights with the corresponding coal weights. A proximate analysis of this refuse, or of the coal, will show the percentage of combustible lost.

Coal weighing apparatus may be classed as registering meters, automatic coal scales, and hand-adjusted weighers. So far as the writer is aware there is no autographic coal meter on the market, although it would appear that such a one would be of distinct use, especially in connection with mechanical stokers. Possibly the intermittency of hand firing has deterred its development. The lack of such a device necessitates personal recording of the time and corresponding coal weighings.

WATER FLOW METERS

The uses to which water meters may be put in the power plant, as well as the different installations necessary for complete datta, are very numerous because of the many combinations of other equipment. They may be arranged to show evaporative results, boiler leaks, and, inferentially, from high steam consumption of plant, they may be used to locate steam pipe and valve leaks, excessive pipe condensation, inefficient engine operation, or inefficient auxiliaries. For the determination of blow-off waste a meter may be placed in the blowoff line from all the boilers, or, if both water and steam flow meters are used, this waste may be found by differences. Evaporative results are found by subtracting from total feed-water records the corresponding blow-off records. When arranged to measure engine condensation, water flow meter records taken together with wattmeter records show losses of efficiency as soon as they develop. Feed water recorders applied to individual boilers, establish uniform feeding, an object very desirable to efficient operation and maintenance; but when one meter supplies a battery, especially if its storage space is large, a smooth graph may not show uniform feeding to individual boilers, and a broken graph does not disclose which boiler is irregularly fed. The moral effect upon operatives, however, is distinctly good in any case.

STEAM FLOW METERS

The services of steam meters in part run parallel to those of water meters, such as the determination of boiler evaporation, engine performance, etc.; therefore, either the one or the other may be chosen for certain requirements. For the purpose of the individual testing of auxiliaries, however, and many other applications, the steam meter is invaluable. For instance, it will locate definitely trap and other leaks in pipe lines supposedly shut off during night hours (the amount of steam lost in this way is amazing), whereas a water flow meter will indicate a loss by high feed consumption, but only a diligent search will show whether it proceeds from faulty pipe lines, inefficient auxiliaries, or the like. In noncondensing plants the steam meter furishes the only practicable method of continuously following engine performance. It is also invaluable for determining the amount of steam used or wasted in heating systems.

For the purpose of adjusting and regulating the loads on boilers working in a battery, the steam meter is better than a meter on a feed line, since a boiler may take a large quantity of feed while it does little evaporating, and vice versa, for fairly long periods, depending upon the water space and the rate of evaporation. If furnace conditions are constant and correct, a steam meter will show irregularities in feeding, the steam rate increasing as the feeding rate decreases; but a feed water meter will show only large irregularities in the rate of steaming. Steam meters applied to individual boilers show the *instantaneous* steaming rate of each. If one boiler of a battery is loafing, the pressure gauge may not show it; lacking a device to show the steaming rate this would throw an excess of load on the other boilers, so that all might be operating at rates corresponding to low efficiencies. With steam meters, however, the percentage of rating at which each boiler is operating can be ascertained instantly, and boilers cut in or out so that each boiler is operating at its load of maximum efficiency. Furthermore, the steam meter will, by a falling off of its indications, show when the fuel bed is in bad condition or other furnace defects. Some of these services, in the matter of regulation and the indication of furnace defects, may also be performed by other types of recorder, CO_2 meters, differential draft gauges and flue thermometers.

Cellulose Cooking Systems

New Method of Disintegrating Wood for the Manufacture of Cellulose

VEGETABLE fibers are opened up for the manufacture of cellulose by means of acid sulphite solutions almost exclusively by boiling the crude fibers in the sulphite solution itself. Attempts to prepare the crude fiber by steaming the fibrous mass impregnated with sulphite solution have hitherto been unsuccessful, according to *Paper Making*.

Impregnation and steaming of wood with sulphite solutions is described in an old German patent. The steaming, however, does not seem to separate the fibers from the incrustation; it only loosens the structure and renders the wood flexible. The inventor failed to observe that by carrying out the experiment in a suitable manner the wood could be converted into cellulose. As it is, his process only temporarily softens the wood which has almost its original properties after drying.

In the case of Schmidt's steaming process, also a German patent, the final object is the manufacture of cellulose. This, however, can only be attained by a highly complicated and expensive process. The usual thorough impregnation of the wood with liquids must be replaced by hydraulic pressure. After steaming the wood with aqueous vapor the digster is emptied, and one of the sulphite lyes customary at that time is admitted to the vacuum chamber by suction, and to bring about thorough impregnation the digester is subjected to hydraulic pressure. From twenty to forty times a pressure of about twenty atmospheres is produced, and an equal number of times reduced to about eight atmospheres. Finally the pressure is raised to twenty atmospheres, all for the purpose of insuring air-free contact of the fiber bundles of the wood with the liquid. This is supposed to be the characteristic feature of the process.

It is more probable, however, that the varying hydraulic pressure loosens the cohesion of the fiber bundles. This method of operation requires very expensive plant, including a vacuum pump and a keir capable of resisting the hydraulic pressure of twenty atmospheres.

Obviously an outcome of this process is the half-stuff process of Schulte, which also entails a complicated hydraulic impregnation. Inclusive of the subsequent steaming, not less than thirty-five hours are required in order to produce semicellulose, but not cellulose.

In this process, practised about twenty years ago, a solution of neutral sodium sulphite was used as impregnating liquid, to which not more than 5 percent of the total quantity of sulphurous acid was allowed to be added in the shape of free sulphurous acid.

As a rule importance seems to have been attached to the limitation of the quantity of the sulphurous acid in the steaming process. In Dr. Schwalbe's British patent, 19,142 of 1910, only half the equivalent of the quantity of neutral sulphite employed is allowed to be present in the shape of free sulphurous acid. Consequently the use of sulphites of the alkaline earths is almost excluded, because it is not practicable to produce strong solutions, for instance, of lime, with only one to one-and-a-half equivalent at the most of sulphurous acid.

So far, therefore, the two following conditions were considered essential for the successful performance of the steaming process; namely, complete freedom from air, or limitation of the quantities of free sulphurous acid to be employed.

It has now been found that neither hydraulic impregnation for the purpose of obtaining complete absence of air in the raw fiber, nor restriction of the quant'ty of free sulphurous acid is necessary to open up the raw fibers by steaming. Cold or hot impregnation with calcium sulphite liquors followed by steaming is sufficient to open up the raw fiber. For rapid opening up, high yield of cellulose, light color of the product, and for the reduction of the temperature at which the reaction takes place, it is, however, convenient to employ more sulphurous acid than can pass into the raw material by impregnation with the ordinary sulphite liquors.

It has been stated that ordinary sulphite liquors, or even sulphite liquors containing an increased amount of free sulphurous acid, could not be used. It was assumed that only by restricting the amount of acid could strong cellulose fiber be obtained in high yield. Experience in boiling with sulphite liquor showed that browning and softening of the fiber was to be expected by using too much free sulphurous acid. In the usual boiling of wood in sulphite liquor it is noticed in particular that the pieces of wood which protrude from the boiling liquor become brown and lose strength. These pieces are surrounded by an atmosphere of steam and sulphurous acid, and are consequently under quite similar conditions to those which exist in the steaming process.

This idea that heating in an atmosphere containing acid leads to the browning and softening of the fiber has obviously caused attempts to be made, first to render the air contained in the wood innocuous by the most careful impregnation, with the idea that it is this air which causes the browning and softening, and secondly, to limit the quantity of free sulphurous acid as much as possible so that the browning and softening action may be exerted to the least possible degree. Dr. Schwalbe now asserts that this supposed injurious action of the sulphurous acid in an atmosphere of steam does not take place at all. He states that without specially careful impregnation and by using large quantities of sulphurous acid, easy opening up of strong and light-colored fiber in high yield can be obtained. A steaming process may therefore be now carried out in a very simple manner.

The raw fibers are impregnated with sulphite liquor. The liquor may be hot or cold, and a vacuum may be employed when it is desired to shorten the impregnating process as much as possible. When impregnation is finished the impregnating liquor is drawn off, and steam is introduced into the digester. After several hours of steaming, steam is blown off, the digester opened, and its contents washed and treated in the same way as fibers after cooking.

The strength of the sulphite liquor must be adequate to the character of the raw fiber employed, and the desired degree of opening up. In all cases the free sulphurous acid must be at least equal in quantity to the fixed sulphurous acid. In most cases this quantity will be exceeded in order to secure rapid opening up. In such a case the impregnating liquor must either be made stronger than usual sulphite liquors are, or gaseous sulphurous acid must be introduced into the digester after impregnation has been completed and the impregnating liquor is drawn off. Gaseous sulphurous acid may be introduced at the ordinary temperature or any other temperature; sulphurous acid gas may also be admitted under pressure.

This introduction of gaseous sulphurous acid may be ended before the steaming process commences, but also during the steaming some gaseous sulphurous acid may be added continually.

It is also possible to introduce a strong sulphite liquor to the digester after drawing of the impregnating liquor, if this new liquor does not come in contact with the raw fiber material to be steamed, but is admitted under a false bottom. By heating this liquor with steam, sulphurous acid is evolved out of it.

On the score of expense preferably sulphite liquors prepared from alkaline earths will be used. The character of the process is in no way altered if certain quantities of sulphite liquors of the alkalies be added or even if these be used alone, provided that care be taken that the free sulphurous acid present is at least equal in quantity to the fixed sulphurous acid.

The raw fibers may also be impregnated with milk of lime, the impregnating liquid drawn off, and the necessary quantity of sulphurous acid added as gas. Impregnation of fibrous material with milk of lime was patented by Archbold (American patent, No. 274,250, of 1883). The process does not seem to have been protected in England. Archbold introduces gaseous sulphurous acid immediately after the treatment with milk of lime, without drawing off the impregnating liquor. His object is to obtain a special powerful action by producing the calcium bisulphite in and on the fiber in the nascent state. For this purpose as much milk of lime as will cover the raw mass is introduced directly into the digester into which gaseous sulphurous acid is to be admitted.

Dr. Schwalbe's new steaming process, recently patented in England (18,199/1914), yields cellulose and halfstuffs according to the concentration of the impregnating liquid, the amount of sulphurous acid, the duration of the steaming and the temperature. The yields are higher than those obtained by the liquor boiling process; far less waste liquor is also produced, and raw fibers of the most varied kinds can be opened up.

A further advantage also is secured. In the liquor boiling process the outer layers of the bundles of fiber are, according to the process of solution which proceeds gradually from the outside towards the inside, still subjected to the boiling liquor, even when they are completely free from incrustations. The result is that the exposed cellulose fibers become attacked by the liquor, and their strength weakened while the incrustation is only dissolved in the innermost layers of the bundles of fibers. Thus, for example, if boiled wood be impregnated prematurely, "cores" will be found—*i.e.,* pieces of wood which are perfectly soft outside, but still hard inside. Even if the core has been softened a mixture of overboiled and just opened-up fiber is obtained. The new steaming process yields only uniformly opened-up fiber, as the reaction of opening up takes place in an atmosphere of gas.

The wood, cut up in chips as for liquor boiling, is impregnated with one of the usual calcium sulphite solutions containing about 3 percent of total sulphurous acid at temperatures from 70° to 110° C., for from three to five hours, the impregnating liquid is drawn off and as much gaseous sulphurous acid is then introduced into the digester as may be necessary to double the amount of acid contained in the wood, and the steaming commenced and continued for from three to five hours.

The steaming should be continued until it is possible to separate the bundles of ligneous fibers, while partly dissolving the binding substance or incrustation, for instance, by treating them in an edge runner, or until finally the wood has been opened up into cellulose or halfstuff and the binding substance completely dissolved.

The quantity of acid contained in the wood may be ascertained by a simple titration of the waste sulphite liquor. The supply of additional sulphurous acid may be from a tube containing liquid sulphurous acid, the tube being placed on a scale and sulphurous acid drawn off until the desired amount has been taken. Another way is to heat an aqueous solution of sulphurous acid by a steam coil, forcing the sulphurous acid produced into the digester. If the volume of the aqueous solution and its specific contents of sulphurous acid are known, the quantity of sulphurous acid forced into the digester is easily ascertained.

In treating raw flax or hemp it is impregnated with a solution of carbonate of soda, the liquor run off, and steaming effected in an atmosphere of gaseous sulphurous acid.

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Membership, either active or associate, is open to any person of technical education occupying a position with a member of the American Paper and Pulp Association; persons who have special qualifications or experience, and others who are qualified by their connections to support the aims of the section.

The objects of the Technical Section of the American Paper and Pulp Association as set forth in the Constitution and By-Laws are: To stimulate interest in the science of pulp and paper making; to provide means for the interchange of ideas among its members, and to encourage original investigation.

New Members of the Technical Section

CANDIDATES for membership in the Technical Section whose applications have received the approval of the executive committee during the interval between September 23 and October 23, 1915, are as follows:

Bagg, John L., Box 167, Parsons Paper Company, Holyoke, Mass.

Behrend, Ernst R., president and general manager, Hammermill Paper Company, Erie, Pa.

Bradley, P. D., superintendent, Defiance Paper Company, Niagara Falls, N. Y.

Dodge, George W., assistant to chief engineer, American Writing Paper Company, Holyoke, Mass.

Forrester, George P., beater engineer, American Writing Paper Company, Holyoke, Mass.

Griffin, Martin L., manager of chemical department, Oxford Paper Company, Rumford, Me.

Hall, Emmett A., secretary-treasurer, Glens Falls Machine Works, Glens Falls, N. Y.

Kennedy, A. J., salesman, Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.

Mann, F. A. L., beaterman, Hammermill Paper Company, Erie, Pa.

Matheson, Einar, superintendent of bureau of tests and sulphite mill, St. Croix Paper Company, Boston, Mass.

Parant, L. J., general superintendent, St. Croix Paper Company, Woodland, Me.

Sutermeister, Edwin, chief chemist, S. D. Warren & Co., Cumberland Mills, Me.

Woodruff, J. B. purchasing department, in charge of woodpulp, American Writing Paper Company, Holyoke, Mass.

A Warning Against Adulterated Dyes

IN a communication from H. P. Carruth, chairman of the Committee on Standard Methods of Testing Materials used in the Manufacture of Paper, attention is called to the fact that certain dealers in aniline colors have taken advantage of the situation created by the European war and are exacting most unreasonable prices from paper manufacturers whose necessity compels them to procure colors at any cost. Some adventurers have entered the field with fake dyes. Mr. Carruth says:

"I have personally examined samples which barely affect the natural color of the paper when used in proportions which should have given fairly strong dyes. I have heard of instances where 90 percent and even 98 percent reductions have been made, and of one instance where an entire barrel of so called aniline dye was required to get a moderate shade in a thousand pound engine."

As has been already pointed out in Paper, this outrageous and demoralizing practice is merely a recurrence of what always happens when any useful and necessary article of trade ceases to be available to the extent of the demand. When the supply falls short, prices naturally and normally advance. Then it is that adventurers seize upon the opportunity to acquire as large a portion as they can of the available supply, and part with it only when they can obtain exorbitant prices which yield them profits out of all proportion to their risk or service.

Men who are engaged regularly as dealers in these commodities, and who have established friendly trading relations with a regular line of customers, are always considerate in such times and do not demand excessive profits. This course they pursue, because it is a matter of justice to their customers and not alone this, but because it is good business policy.

It is highly important that members of the Technical Section of the American Paper and Pulp Association should be put on their guard concerning the unscrupulous operations of certain individuals and companies which have temporarily engaged in the aniline dye trade for speculative purposes, without any regard to the interests of their customers or even their future goodwill.

Mr. Carruth has rendered a service to the industry in advising caution on the part of paper manufacturers in purchasing color supplies. If urgency requires that purchases be made from unknown or temporary dealers, they should be made upon conditions that will at least require the furnishing of unadulterated dyes.

A Standard Work on Paper Testing

A FOURTH, enlarged and improved edition of "Paper Testing," by Professor Wilhelm Herzberg, a recognized authority on a subject of prime importance to every paper manufacturer and dealer, has been issued through the publishing house of Julius Springer, Berlin. Embodying all the advancements made in this field during the eight fruitful years that have elapsed since the appearance of the third edition, not only have the empty spaces between the different chapters been filled out, but the pages of text have been increased from 212 in the third edition to 276, the illustrations in the column from eighty-six to ninety-eight and the number of superb tables from seventeen to twenty-three. There is not one of the twenty-one chapters that has not undergone careful revision by the author, or that has not been supplemented by new matter, prepared with the care and diligence that characterizes all his work. The price of the new edition, which is handsomely printed on fine white paper and substantially bound, is fourteen marks ($3.35 U. S.)

PAPER

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An Infant Industry Entitled to Support

A GOOD deal of space is devoted in this issue of Paper to the addresses and discussions before the Society of Chemical Industry on the dyestuff situation. Nearly every phase of the situation came in for discussion at the meeting of industrial chemists at the Chemists Club last Friday evening, which is reported so fully in our news columns.

The necessity of developing the coal tar chemical industry in this country in order to provide the necessary intermediate products of coal tar used in the manufacture of finished aniline dyes was properly emphasized at this meeting. Heretofore, with characteristic American prodigality, we have been shipping the waste by-products of the coke ovens of the steel industry to Germany and Great Britain for conversion into benzol, carbolic acid, aniline oil, and other intermediates used as the bases of coal tar chemicals, including the aniline dyes and coal tar colors employed in the tinting of paper and textile fabrics.

In developing this branch of manufacture, which is a highly scientific industry, the German chemists have had the advantage of years of application and scientific study, assisted by the universities of the empire. It can be readily understood that after some fifty years of study, research and application, coupled with great commercial enterprise and Government encouragement and backing, the German coal tar chemical manufacturers enjoy an advantage over possible competitors that cannot be overcome in a month or two of effort.

If we are to have a self-sustaining and self-sufficing dye industry in the United States, it will be absolutely necessary for our Government to pursue the policy of the German Government, the wisdom of which has been so fully demonstrated by the prosperity of the industry in that country. The manufacture of finished dyes in America will be a new and dependent enterprise requiring the support and encouragement of the Government for a number of years to come; until at least our people have acquired the experience in this direction which will put them on an equal footing with their foreign competitors.

It follows therefore that whatever may be our political creeds, or whatever may be our general opinions concerning protection, an exception should be made in the case of this infant industry, which should be given proper nourishment until it reaches that state of maturity where it will be able to take care of itself.

Looking to this end, it would be well for all who are directly or indirectly interested in the matter to urge upon the authorities in Washington the adoption of such a course.

Cost and Selling Price

AT the risk of becoming wearisome by repetition and of being criticised for lack of versatility, we would repeat again what we have often undertaken to express through these columns—the necessity of closely observing the relation between the manufacturing cost and the selling price of industrial products.

It may occasionally happen that men of large means and equally large philanthropic views engage in an enterprise for the sole purpose of benefiting other people, with no desire or expectation of personal gain. This however is the exception and not the rule. Ordinarily one who goes into business of any kind does so with the view of conducting it in a manner that will yield a revenue; in other words, he engages in the work for the profits which may accrue.

It does not follow that the conduct of a profitable business is in conflict with the public good. Indeed, the welfare of the country depends upon the success of its individual citizens. General prosperity is the sum total of individual prosperity. The man who, without oppression or unfair means, builds up an industry that affords employment to the laboring classes and at the same time permits him to accumulate a reasonable surplus, is a public benefactor. Therefore, it is not inconsistent with good citizenship that men should aim to make their own business a source of profit, which is indeed the aim of practically all who live to any purpose.

This being the rule by which we are supposed to guide our activities, it is strange but true that a large proportion of our busy men go on toiling day after day with little or no apparent regard for the business principles which must inevitably determine the success or failure of the things they do. It is human nature to gaze steadfastly upon the things that please and magnify every prospect that favors; while on the other hand we avoid when possible looking upon conditions which are against us and often endeavor to deceive ourselves as to the real situation in our own affairs.

If there is any way by which to measure the profit of ones business other than estimating the difference between the cost of manufacturing and distributing our goods and the price obtained for them, we have not heard of it. In other words, when a commodity is sold, whatever we have left out of the selling price after all charges of every kind and description connected with its purchase or manufacture have been paid, represents the profit. It is easy therefore to understand that this profit may be increased or diminished by enlarging or reducing either the cost of production or the price at which goods are marketed, or both.

Strange to say, the average man, though he may quote and accept ridiculously low prices for his wares, seems nevertheless to understand always the importance of the selling price; while on the other hand he does not so uniformly recognize the equal necessity of watching closely the item of cost. There are men who will make every reasonable effort to obtain a 5 percent advance on the sale of their goods who apparently give little heed to the possibility of effecting a 5 percent reduction in the cost of manufacture, though one is worth just as much to them as the other.

It is safe to say that there are men today engaged in the manufacture of paper who can tell you whenever they may be called upon, the price they obtain for their goods to the fraction of a cent, who, however, do not know what their papers are costing them, and if compelled to answer the question could do little more than guess.

One of the difficulties is that opinions differ widely as to the items which properly enter into cost, as well as to the measure of these items. There is a wide discrepancy in the allowance made for the depreciation in a plant and equipment. Some are very generous in allowing for this, while others swing to the far extreme and make practically no allowance. And some indeed there are who overlook it altogether.

It is an easy matter to figure the cost of materials which are used in manufacturing any line of goods and to add to this the amount of the payroll. With that some manufacturers appear to end their efforts to count the cost, forgetting entirely their original investments and other items, such as taxes and insurance.

Some time ago an effort was made in one of the branches of the paper industry to establish a uniform system of cost accounting. The conferences which were held from time to time in connection with this work developed the rather startling fact that scarcely any two of them entertained the same views of proper accounting, their methods differing widely. In another instance the manufacturers of a certain grade of paper undertook to determine the difference in cost of packing their product in frames or cases, and the reports made by the different mills on the excess of casing cost ranged all the way from 1 to 70 percent. Where such discrepancies exist, and they seem to exist all along the line, somebody must be wrong, and somebody is deceiving himself.

But the thing to which we desire at this time to call special attention is that advancing costs are not always clearly observed. Many manufacurers may in ordinary times, when prices are stable, have very clearly defined views of the relation between cost and selling price, but they fail to maintain this relation by constantly adjusting one to the changes of the other.

In many, many ways the manufacturing cost of paper has been gradually advancing and is advancing today, yet we fail to observe any corresponding increase in the selling price. For a long while indeed although the trend of the cost was upward, the market price was moving in the opposite direction. It continued this upward course until it seemed the bottom was reached and there it has hung for some time.

Generally speaking, the materials which go into the production of paper are higher than they were formerly and are continuing their upward climb. Freight rates have advanced and promise further advances. Labor is restless and threatening. Here and there demands are made for increased wages or reduced hours in other industries, and concessions are being made. If such demands should be made of the paper manufacturer, and it is altogether likely they may, his cost will be increased whether he yields or fights. On the other hand, we fail to find any reductions which compensate these additional items of expense.

If it be true, and we believe it is, that very many paper mills were operated with little or no profit when they were getting a better price for their product and paying less for the manufacture, it is a simple problem in mathematics to demonstrate that some must be running now at a loss, or certainly not doing more than making an even break.

For a long while the mills have been introducing new economies and endeavoring in every way possible to overcome these unfavorable conditions by increasing their plant efficiency. Practically everything has been done in that direction now that we can hope to accomplish in a material way. There remains little prospect of reducing manufacturing cost, while indeed it will be difficult to hold it where it now is. What then must be the answer? To the prudent business man who seeks the return on his investment and for his expenditure of energy to which every man is entitled, is it not to get more for his product and to get it at once?

Paper is not selling today for what it is worth. A reasonable advance in the market price would greatly benefit the industry and all kindred and dependent activities, while on the other hand increase in price would in its final distribution be unappreciable. It could not possibly work a hardship to anyone.

Experts Speak on the Dyestuff Situation

Chemists and Government Officials Discuss Upbuilding of Coal Tar Color Industry

THE most largely attended meeting in the history of the New York Section of the Society of Chemical Industry took place last Friday evening at the Chemists' Club, 50 East Forty-first Street, New York, the subject of the evening's discussion being the dyestuff situation. The meeting was opened by Chairman William M. Grosvenor, who later gave way to Professor Charles F. Chandler, who introduced the speakers and conducted the proceedings. Although an Englishman, Perkin, was the inventor of the first aniline color, mauve, the first coal tar color was produced in 1771 when Wolff treated indigo with nitric acid and got picric acid. Professor Chandler mentioned these things and others of interest to chemists before calling upon Dr. E. E. Pratt to answer the question, Do We Want a Coal Tar Chemical Industry? Dr. Pratt is chief of the Bureau of Foreign and Domestic Commerce of the Department of Commerce, and outlined a plan of protecting the American dyestuff industry **by applying the antitrust laws to ruinous underselling by** foreign producers of coal tar dyes.

ATTITUDE OF THE GOVERNMENT AUTHORITIES

"There is," Dr. Pratt said, "one serious obstacle in the way of the confident and determined development of the coal tar dyestuff industry on American soil, and that difficulty is the possibility, no, rather the certainty, that upon the resumption of normal international conditions, European manufacturers will endeavor by boycott, underselling, and other methods of competition, to win back this profitable market and put out of business a new and struggling dyestuff industry."

Dr. Pratt pointed out the efficient organization of the European coal tar dyestuff industry, and particularly the German industry. He stated that "the German coal tar chemical industry is probably the most highly and completely organized industry in the world. The industry involves not only complex chemical processes, but elaborate and expensive plants. It requires the services of thousands of scientifically trained chemists and vast armies of workers. Not less highly organized is the commercial end of the business, devoted to merchandising the products of the twenty-two dyestuff factories manufacturing in Germany. Commercially, the coal tar chemical industry of Germany is a unit. Prices, terms, conditions of sale, market competition, export policies are determined and fixed by the industry as a whole.

"Up to the present time, there has been no serious competition with the foreign coal tar chemical industry. Any attempt to seriously dispute its dominance in other countries is persistently checked and prevented by the united action of European producers, by underselling and boycotts. Of the world's production of coal tar dyes, valued at $92,150,000, Germany produced $68,300,000 worth, or practically three-fourths of the world's supply. Of the world's export trade, Germany has an even larger share, taking for herself over 88 percent."

Dr. Pratt pointed out that the United States has the raw materials, the markets, the technical skill, and the capital to develop this new industry, but he went on to cite specific examples of how the coal tar chemical industry in this country had been throttled. He quoted from a letter to the Commissioner of Corporations from the Benzol Products Company, which was organized in the State of New York for the manufacture of aniline oil, which is the foundation of the larger part of the coal tar colors and dyes.

"Although this company started," the letter goes on to say, "with a capital of approximately only one-tenth of the United States' consumption, the European convention immediately announced their intention of putting us out of business as promptly as possible by underselling regardless of costs. Accordingly they at once cut the regular net delivery market price of their exports to this country from 10 9-10 cents per pound to 9 9-10 cents per pound, and made secret contracts for sales in large quantities at far lower prices. Similar reductions in price had not taken place in other countries, the reduction here being made in the face of world-wide advance in the price of materials entering into the manufacture of aniline oil, in addition to the well-known advance in the labor involved in its production."

Dr. Pratt mentioned another case of an American dyestuff concern reporting a considerable list of colors, continued manufacture of which was rendered commercially impossible by the prolonged underselling on the part of foreign competitors at rates below the ordinary market prices of the wares in question.

PROGRESS OF MANUFACTURE IN THE UNITED STATES

After pointing out the serious effects of the European war upon the supply of dyestuffs furnished to this country, and the practical dyestuff famine which has occurred in this country, Dr. Pratt mentioned specifically not only the increase which has taken place in the production of dyestuffs by factories in existence prior to the war, but the fact that numerous new plants have been established.

Five domestic concerns manufacturing dyestuffs have doubled their output. Another factory, the branch of a large German firm, has greatly increased its output. Still another factory manufacturing aniline has quadrupled its output.

The great demand for dyestuffs has brought new concerns into the field. There are now nine new plants making aniline and intermediates. Their total output is 18,000 pounds daily. One new plant for manufacturing dyestuffs, capitalized at $2,000,000, is now in existence and is producing at the rate of 1,000 pounds daily. Another plant will be ready for operation about November 1. Another company, capitalized at $15,000,000, has started plans for extensive works in different parts of the country.

Our total production of coal tar dyestuff materials at the present moment is probably over three times the production prior to the European war. In July, 1914, we were saving a scant 10 percent of the coke by-products by means of by-product recovery coke plants. Today we are saving not less than 20 percent.

HOW THE INDUSTRY WILL BE PROTECTED

In regard to protective measures against unfair foreign competition, Dr. Pratt Said:

"This matter has been thoroughly discussed by the officials of the Department of Commerce and the Federal Trade Commission and they have agreed substantially on these points, namely:

"1. That foreign concerns should be permitted to exercise no privileges in this country or against concerns in this country which are prohibited to domestic concerns. In other words, what we call unfair competition shall not be permitted any more to foreign concerns than to domestic concerns.

"2. That this or any new industry which aims to place us in an independent position industrially among the nations of the world shall be given a fair chance."

Dr. Pratt then raised the question of exactly how this was to be accomplished, by what methods, and by what legislation. He emphasized the idea that the legislation should be rather against the unfair competition than in the nature of tariff legislation, and instanced the experience of Canada, South Africa and Australia, on these points.

He concluded with the following statement:

"It is our desire that the United States shall have independent and self-sufficing industries. I hope that the time has arrived when we can cast off industrial, commercial, or financial allegiance to any nation or any group of nations. I hope that the time has arrived when we can do away with our industrial crutches. I hope that the time has arrived when we can go forward into the world's markets, man for man, industry for industry, and compete fairly and squarely at home and abroad, and win."

BRAINS vs PREJUDICE

OF COURSE, THERE IS NO ARGUMENT ABOUT YOUR HAVING BRAINS, and you will admit you have prejudices. But sometimes prejudices stultify the brain action and mistakes result. We have heard people say that under no circumstances would they use talc.

From our point of view, talking about brains, "There's Nobody Home," and prejudice was working overtime when our representative called.

BUT

"TALCLAY"

is NOT TALC. Its chemical analysis is as different as sand is from clay.

Talclay is Clay

and better than clay, because it has ingredients in it which give it more than 100% greater retention than clay, is pure white, free of grit and mica, and contains no moisture. Why pay freight on Water?

We know that the brain is working now, and that you are saying to yourself: "I believe I'll ask them if they have this, and get a sample." Do it! It will probably cut your clay bills 50%.

The St. Lawrence Talc Co., Inc.

Natural Bridge, N. Y.

THE WORDS OF A VETERAN AMERICAN MANUFACTURER

In introducing J. F. Schoellkopf, Professor Chandler referred to him as the most experienced dyestuff manufacturer in the United States, whose "words will certainly carry great weight." Mr. Schoellkopf's complete address is printed as a leading article in this issue.

DR. NORTON TELLS WHAT THE GOVERNMENT IS DOING

Dr. Thomas H. Norton, commercial agent for the Bureau of Foreign and Domestic Commerce, spoke of the work that the Government is doing to aid in meeting the dyestuff shortage, and outlined the present situation and its requirements at considerable length. He urged the need of unity and solidarity in the industry, pointing out the importance of excluding all unnecessary overlapping and duplicating of effort, at least in the formative stage of the industry. The needs of the industry included financial, technical and commercial unification, he said, which contribute so largely to the effectiveness of the German rival. At the same time, he pointed out that any such combination must be freed from monopolistic features. Along these lines, he endorsed a recent suggestion to establish Government-owned factories for the production of coal tar intermediates.

"A very distinct element of protection to a growing color industry," said Dr. Norton, "would result from the establishment of a Bureau of Standards for Dyestuffs. Its function would be to formulate the physical and chemical criteria of purity for all dyestuffs. Similar principles of standardization would likewise be applied to the varied methods of application on the different fibers and other wares."

Dr. Norton then proceeded to outline a plan for the organization of dyestuff consumers, similar to existing organizations among farmers. All purchases would be made through a central agency and would be obtained at lowest wholesale rates. "It would be one of the most powerful bulwarks to ward off the dangers of persistent and determined efforts, on the part of European rivals, to crush and stifle an American industry," he said.

COMMON SENSE FROM A CHEMIST

In an address on "Common Sense on the Dyestuff Situation," Dr. J. Merritt Matthews, a consulting chemist, of this city, discounted the importance of recent announcements of discoveries, stating that a wave of scientific insanity seemed to have swept over the country in the efforts to meet the dyestuff shortage.

TEXTILE MANUFACTURERS NOT WELL INFORMED

"The chemist has long been accustomed to the misconception by the lay mind of things chemical," said Dr. Matthews, "but in the dyestuff propaganda these misconceptions do not seem to have been confined solely to the layman, but seem also to have extended to many within the profession itself. It is a rare exception to find a textile manufacturer the person probably most interested in the dyestuff question, who is at all acquainted with the nature of the dyestuff problem, even in its simplest form.

"Radical methods proposed for the production of dyestuffs, either from newly conceived crude materials or by darkly hidden secret chemical processes, must generally be taken as being the hare-brained conception of ignorant enthusiasts, or the illegitimate promotion of thorough going fakirs."

Dr. Matthews expressed the opinion that the crux of the whole situation lay in the economical production of the intermediates. The only need for protection arose from the necessity to equalize the factors of labor, raw materials, methods of selling and competition, and not from inability to compete in turning out dyestuffs, he said.

COAL TAR INTERMEDIATES ARE CHIEF NECESSITIES

"But," said he, "outside of any industrial connection or the fostering of any special industry for its own interests in preparedness for self-defense our Government should see to it that a suitable line of coal tar intermediates is manufactured in this country free from foreign affiliations or control. In whatever way this may be brought about—by tariff, by anti-dumping laws, by subsidies or by whatever means, let it be the duty of our Government to see that such an industry is established; and then the users of dyestuffs, in whatever industry they may be, may rest assured that the manufacture of the finished dyestuffs will soon be an accomplished fact in this country."

The complete text of Dr. Matthews's address will be found in another part of this issue of PAPER.

MEN FAVOR HIGH TARIFF

John P. Wood, president of the National Association of Woolen Manufacturers, spoke informally on the interest of the consumer in the dyestuff situation. He advanced the argument that cloth already dyed should be subjected to import duty on account of the dye used in its manufacture.

TARIFF PROTECTION ADVOCATED FOR ANILINE INDUSTRY

A strong appeal for the revision of the tariff so as to furnish some protection to the aniline dye industry, which has gradually grown in size since the war shut off European products, was made by W. H Childs, one of the promoters of the Benzol Products Company, referred to in Dr. Pratt's address.

Mr. Childs told of the formation of the Benzol Products Company before the war began.

"At the first attempt to put aniline upon the market," said Mr. Childs, "the foreign trade immediately dropped prices much below a remunerative basis for the evident purpose of driving the Benzol Products Company out of business and preventing the building up of the industry here.

"We kept on, however, although at a meeting a month before the war it was shown that the company had lost money every year. Within thirty days of that time we found ourselves practically the only producers of aniline deliverable in the American market. Today we are producing in excess of the total amount of aniline consumed in this country prior to the war."

Mr. Childs said that the manufacture of all the aniline and anthracene colors could long ago have been fully established in this country if the Government could have prevented the German cartel from driving out, by brutal competitive methods forbidden among our own manufacturers, the aniline industry just starting here.

"This industry in Germany as a whole," said Mr. Childs, "is bound together by trade agreements and cooperative arrangements which add greatly to the efficiency of production."

In conclusion, Mr. Childs said:

"Germany and Japan have been featured before us as war perils, but many thinking men in this country are at the moment more disturbed at the visions of Germany and Japan as peace perils, and are interested in the solution of the question as to what will happen to this country after this war is over.

"There is a great big job before the thinking men of this country, the solution of which cannot be left to the politicians, but requires a united, non-partisan, unselfish, patriotic effort, and that job is to help solve the problem: How can democracy and liberty compete in efficiency with autocracy?

"One phase of this job is to take the tariff out of politics, by the formation of a permanent tariff commission.

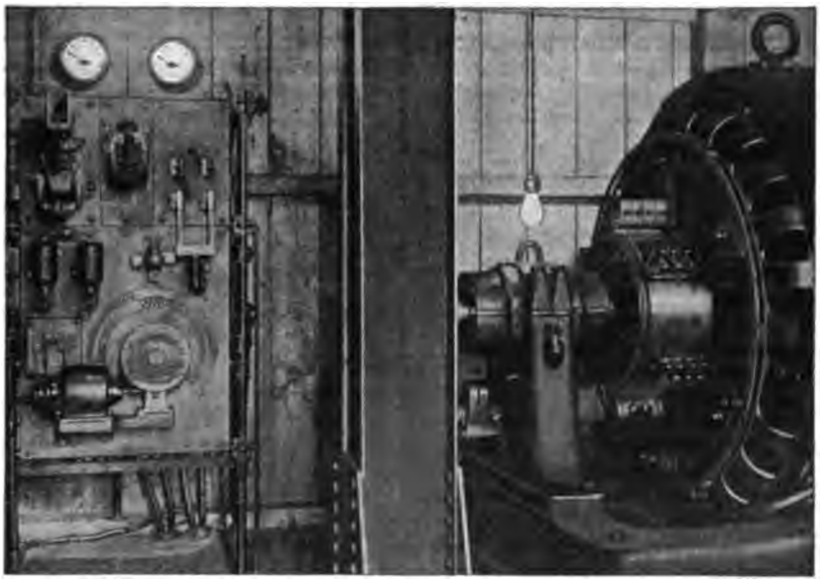
"The commission will be a sort of tariff court, to which any industry that feels aggrieved may apply, and upon showing that it has been unjustly dealt with and that relief is necessary, steps will be taken to have it considered by Congress.

After the speeches the meeting was devoted to the general discussion of the factors involved, and it was long after midnight before the members dispersed.

Price Advances in Finland

As a result of the difficulty of importing chemicals, colors, wire cloth, etc., the manufacturers of paper in Finland raised their prices 10 to 25 percent, in July. For colored papers the increase was greater.

A circular of the Norwegian Foreign Office, dated August 25, prohibited the exportation of rosin size from Norway, to take effect from August 29.



400 Horsepower Westinghouse Motor and Control for 165-inch Paper Machine, Berlin Mills

The Largest Completely Electrified Paper Mill in the United States

A Notable Example of Westinghouse Paper Machine Drive

The variable end of this 165-inch paper machine is driven by a 400 horsepower direct current motor with a speed range of 80 to 560 revolutions per minute in 100 steps or an average speed change of less than five revolutions per minute.

Push buttons do it all, start, stop, speed up or slow down. Simply push the proper button until the required speed is reached and then release this button, the control panel does the rest.

Westinghouse paper machine equipments provide

1. *Close speed regulation for any grade of paper*
2. *Simplicity of control*
3. *Fool-proof operation*
4. *Highest efficiency in use of power*
5. *Apparatus specially designed for the job*

Our paper mill experts are ready to assist you on any expansions or modifications of your present layout that you may be contemplating. Write us for their services.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.
Sales Offices in all large cities

THE WEEK'S LATEST TRADE NEWS

Will Woodpulp Be Declared Contraband

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 26—Some of the local manufacturers of paper were recently asked their opinion as to whether England would declare woodpulp contraband of war. The question is regarded as a natural one owing to the fact that cotton was long ago placed on the contraband list and both yield cellulose under proper treatment, cellulose being an important factor in the manufacture of high explosives.

Shortly after the outbreak of the war England placed cotton on the contraband list to prevent Germany using it in the production of high explosives. Germany then began using chemical woodpulp and the question of whether it also will follow in the wake of cotton is interesting to pulp and paper makers throughout the country.

Local manufacturers do not believe that England will put it on the list, inasmuch as Germany has abundant forests of its own to draw from. However, should such action be taken, the United States will in no way be interested, as this country does not make enough sulphite pulp for its own use and is compelled to import from Canada and the Scandanavian countries.

BLACK RIVER.

Attacks Forestry Article in Constitution

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Oct. 26—While the Association for the Preservation of the Adirondacks has adopted a resolution favoring the constitutional amendment, which will provide a nine-headed conservation commission, a commissioner to be chosen from each judicial district of the State to serve without pay, the New York State Fish, Game and Forest League is strongly opposed to the amendment, asserting that it has a joker in it and that it is being fostered only by selfish lumber interests, which have their eyes on the timber in the State preserve.

President George A. Lawyer and the members of this league aver that if the amendment is adopted the people of the State will have cause to be sorry. Mr. Lawyer states that a visit to the sections of the Adirondacks that have been lumbered will show that those regions have been devastated of their forest growth, the cutting having been done without regard to the future. The lumbermen are now only anxious to do the same with the rest of the forests, he says, and adds that a nine-headed commission as provided by the amendment would be unwieldy and inefficient.

BLACK RIVER.

Prosperous Times in Sight for Paper Trade

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 26—Replying to questions by your correspondent, a representative of one of the largest papermaking concerns in the State said today:

"Business is improving fast. Our mills have all they can do now, and we believe in a few weeks they will have more—and then some. Price tendencies are upward. Wrappings and tissues have already advanced, together with some grades of writings, and other lines in all probability will shortly be affected similarly. We are not looking necessarily for a boom, but we are certain of good business in the immediate future, unless all signs fail."

The above expresses about the general opinion of manufacturers concerning the outlook, as gathered in interviews by your correspondent, and goes far to justify the predictions that have been made for many months past in this correspondence that prosperous times for the paper manufacturing business were not far away.

Negligence Suits in the Supreme Court

[SPECIAL TO PAPER.]

WATERTOWN, N. Y., Oct. 26.—Two negligence actions were on the calendar of the October term of Supreme Court, now sitting in this city, with Justice Leonard C. Crouch presiding. Both are of interest to paper manufacturers, and in each case the sum of $3,000 is asked. The alleged negligence occurred in 1913 in each instance before the present compensation law became effective.

One of the cases was that of Michael J. Hanley against the Newton Falls Paper Company to recover for personal injuries sustained while in the employ of the defendant at the defendant company's mill at Newton Falls, November 25, 1913. The plaintiff alleged that he was adjusting the paper on a machine, when his arm got caught between a felt and a roll as a consequence of the machine not being properly guarded. His arm was seriously injured and action was started against the company. The case was called for trial last Tuesday afternoon and a jury drawn, but a settlement was reached between the parties before any witnesses were sworn.

The other case was that of Elwin D. Williams, of Carthage, against Wallace D. Branbaugh, a well-known paper manufacturer of the same place. On the night of November 6, 1913, Mr. Branaugh was driving his automobile on the road between Watertown and Carthage and collided with a wagon owned by Mr. Williams and containing the owner and one Patrick Cotter, besides a cow, pig, chickens and some other live stock.

Williams was hurt in the accident, the wagon was ruined and the live stock was well scattered over the road. Cotter was also slightly injured. Branbaugh averred that he settled with Williams on the spot on the night of the accident, paying him $75. Williams, at the trial, said, however, that this amount was only for the wagon and not for his personal injuries.

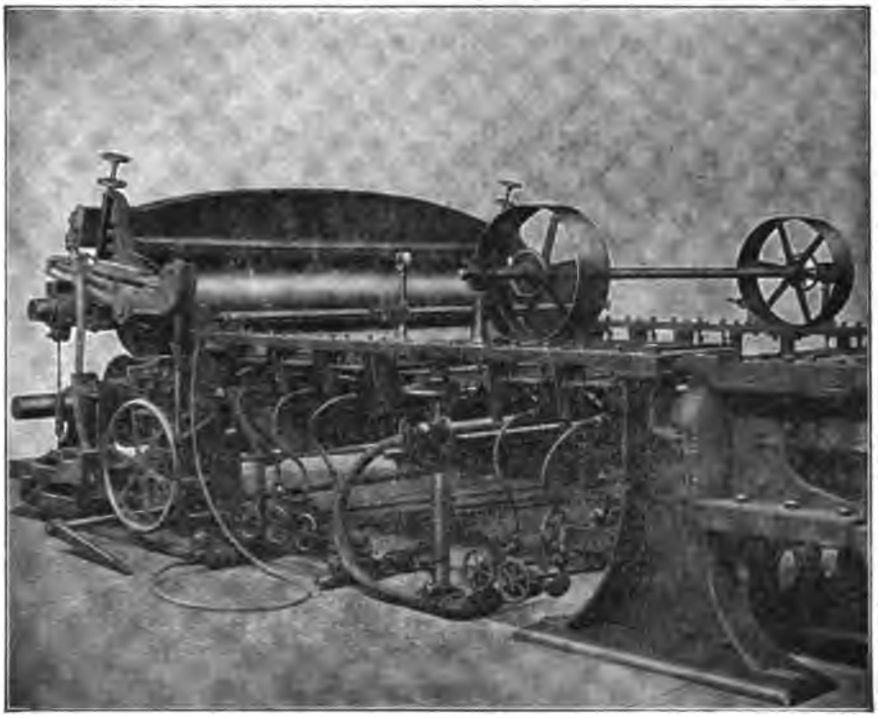
BLACK RIVER.

Talk of a Packet Line from Green Bay

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 26—Wisconsin during the greater part of this month has been enjoying its usual magnificent October weather. Although there has not been much rain the watercourses are still well filled up, and waterpower shows no signs of diminution.

A great deal of interest and no small amount of public discussion has been aroused over the danger of the Government's abandoning navigation on the Fox River, a matter which has been referred to before in this correspondence. Just now the discussion seems to be taking the turn of the desirability of organized effort to put the waterway to greater use, not merely to retain the Government's cooperation, but also for the very practical purpose of obtaining better freight rates from the railroads. An active effort has been made to get the Interstate Commerce Commission to remedy alleged railroad discrimination against this part of the State, and it is now being suggested that the supporters of this movement have been overlooking a leverage they might use which would beat any law ever passed in effectiveness, viz., transportation by the water route. A packet line is now in operation between Buffalo and Green Bay. Green Bay is but thirty miles down the river from Appleton, and at corresponding distances from other river towns and cities. A packet line on the river from Green Bay to upper points would bring to this locality all the advantages of cheap water transportation, and would automatically force better rates from the railroads. The season is now too far gone to permit of anything being done this year, but it is likely that plans for a packet line may be made the coming winter, to be put into effect next season.



THE pivot end of the Ideal Fourdrinier Part is supported by a heavy cast iron frame, with ball joint pivots for shake rails. There is no framework of any kind under the suction boxes in the Ideal, and the additional space obtained is largely occupied by a stretch post which permits of a ten-inch stretch on the wire, as compared with two or three inches in other machines.

The stretch mechanism is in a most convenient position for the tender, and is independent in its action. It is made entirely of brass, and the screw is well protected.

Write us for a bulletin containing a full description of the Ideal Fourdrinier Paper Making Machine.

The Sandy Hill Iron & Brass Works
Hudson Falls, N. Y.

Water Collection by a New Drainage System

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 26—Mention was made in this correspondence a year or more ago of a source of water supply discovered by the Whiting-Plover Paper Company, which was being developed and utilized in the mill. This supply came from springs not very far from the mill and was of unexcelled purity. Up to this time the company has contented itself with the natural flow of the springs, which has been pumped to the mill by an electric pump. The natural supply has, however, been sufficient only for the beaters and washers, and the company is now engaged in a work which it expects will result in supplying it with enough of this water for all manufacturing purposes in the mill.

Eighteen acres of land, which seems to be permeated with water from these springs, has been purchased by the company, and a construction company has been engaged to install a system of drain tiling, from eight to twenty feet below the surface, which is expected to collect the water and conduct it to reservoirs from which it will be pumped to the mill. It is expected that the job of putting in the tiling will require about a month. The degree of success attending the enterprise will be awaited with the interest which its novelty suggests.

General News of Fox River Valley Mills

[SPECIAL TO PAPER]

APPLETON, Wis., Oct. 26—The Alpine Stationery Company, is the title of a new concern just incorporated at Stevens Point, whose principal business for the present will be the manufacture of tablets. The incorporators are John E. Alpine, Arthur D. Alpine and L. J. Seeger. The company already has its plant in operation, and is turning out about 22,000 tablets a day. This is but preliminary, however, to what the concern expects to do in the future, and especially next year, when it get going at prospective capacity.

The new Peerless Paper Products Company, recently established at Menasha, is now going at full capacity. Business is said to be brisk, though prices are not wholly satisfactory. It looks, however, as though this latter undesirable feature would be remedied soon in the natural course of events by the general revival in business that is making itself felt in all lines.

The foundation and outer walls of the building for the new International Wire Works at Menasha are just about completed, the walls being of concrete blocks. The building will be inclosed shortly, and it is hoped that the works may begin operations by December 1.

The Wisconsin River Power Company, which operates waterpower and electric plants at Kilbourn and Sauk City, is issuing bonds for $5,000,000, a portion of which sum will be devoted to the further development and extension of the plants.

Mr. and Mrs. M. A. Wertheimer, of Kaukauna, have returned from New York.

Business Revival Benefits Retail Dealers

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 26—Retail merchants in Green Bay have begun to feel the good effects of the revival in the paper trade, the mining business and the railroad traffic. Buying has increased in the last few weeks chiefly because workers are in possession of more money than they have had in months. With more paper mill employees working steadily, with larger crews of men engaged in hauling freight on the railroads the supply of cash in the hands of workers has been augmented to such an extent that dealers in all kinds of wearing apparel, shoes, etc., have noted an increase in business.

The iron ore and copper ore business in the upper peninsula of Michigan has gradually increased in the last two months and freight business through the Green Bay gateway has jumped to big proportions as a result. Trainloads of ore are passing through the city daily over the Northwestern and the Milwaukee roads.

Objection Filed to Higher Freight Rates

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 26—During a hearing held here last week on an application of the Chicago & Northwestern Railway company, the Chicago, Milwaukee and St. Paul Railway company and the Green Bay and Western system to increase freight rates from Green Bay across Lake Michigan into Central Freight association territory, objection was made by the paper trade to the proposed advance. The hearing was conducted by Examiner Bell of the Interstate Commerce Commission. Perry S. Wagner, salesmanager of the Northern Paper Mills, testified that if the advanced rates were put into effect that company would be obliged to load 36,000 pounds of toilet paper and paper towels into cars, and thus place a hardship on the company and its customers.

Representatives of woodenware manufacturers, a saddlery manufacturer and an excelsior company protested against permitting the railroads to increase rates. The proposed advance ranges from 10 to 20 percent over the rates in force now. The examiner announced at the conclusion of the hearing that both parties would be permitted to file written briefs with the commission and would be permitted to make an oral argument before the commission. The rates were suspended several weeks ago till December 8 by the Federal board.

Orders Are Plentiful in the Northwest

[SPECIAL TO PAPER]

GREEN BAY, Wis., Oct. 26—Business continues to boom in the paper trade here, according to the manufacturers. Crews are being worked on full time to fill orders for immediate and future delivery, and the indication is that the workmen will be kept busy night and day for the greater part of this year. The outlook is the brightest it has been in months, the dealers state.

Signs of Improved Business Conditions

[SPECIAL TO PAPER]

HOLYOKE, Mass., Oct. 26—There are several things which point to an improved business in Holyoke, one of the most important being the increase in business of the Boston and Maine Railroad. In the local yard one switch engine was laid off about a year ago owing to the business depression which made its use unnecessary. The past week this engine had again to be put in commission to help handle the business of the yard. As a good share of the freight business comes from the paper mills, it seems evident that the paper business is picking up all along the line. There are hopes that the corner has been turned and that business will now show a steady increase.

The seventeen cases against the estate of Moses Newton, one of Holyoke's pioneer paper manufacturers, have been automatically shifted to the probate court, the estate having been declared insolvent. The suits were filed by the Home National Bank and by sixteen other parties and were on notes, many of the notes being for large amounts. The claimants will now receive their share of anything which may be paid the creditors of the estate.

Papermakers Ask City to Improve Road

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 26—An effort is being made by the officials of the Kalamazoo Vegetable Parchment Company to have the city and county improve the road running from the plant to the city. In places the road is in bad condition but Jacob Kindleberger hopes that he will be able to induce the city officials to improve the road. The board of supervisors at a session soon to be held will consider the advisability of making this road one of the trunk lines of the county and if this action is taken, an excellent highway will be constructed all of the way to the city.

The Bryant Paper Company last week began the erection of a brick garage. There are a number employed in the offices and several about the mill who own automobiles and the garage is being erected for their use. The improvement will cost about $1,000.

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Rubber Belting

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San Francisco, Cal. - 519 Mission Street
Spokane, Wash. - 157 So. Monroe Street
Boston, Mass. - - 232 Summer Street

University of Maine Paper School Notes

[SPECIAL TO PAPER]

OBONO, Me., Oct. 26—Hamilton Holt, editor of *The Independent,* made a brief visit to the University of Maine paper mill last Friday. Mr. Holt delivered one of the finest addresses ever heard in the University Chapel. He spoke on the extent and effects, moral, economic and biological, of the present war and explained most instructively the great strides that have been already taken toward an international Government and a permanent peace.

F. L. Flanders, of the Dilts Machine Works, was another welcome visitor. He was interested in the possibility of furnishing a small wet machine and the future need of more extensive beater equipment.

MAINE STUDENTS FORM PULP AND PAPER SOCIETY

At a meeting held last Thursday the students in pulp and paper technology at the university organized the Pulp and Paper Society of the University of Maine. Twenty-two students and four members of the chemistry faculty were present. Adrian A. St. Marie, a graduate of the University of Minnesota in Forestry and for some time with the Kimberly-Clark Company, acted as chairman of the meeting. He read a preliminary draft of a constitution, which was thoroughly discussed and adopted with a few changes.

The name of the organization is the Pulp and Paper Society of the University of Maine. The object of the society is to encourage the scientific study of pulp and paper problems and to arrange meetings for talks and discussions by members of the society and others who may be invited to speak.

Sophomores, juniors, seniors, and graduate students who are taking the course in pulp and paper work may be elected to active membership and other students of the university who are interested in these subjects may become associate members of the society. The chemistry faculty will be advisory members.

The following officers were elected:

President—Ralph William Fannon, Appleton, Wis.; vice president—George Edward Fox, Glens Falls, N. Y.; secretary—Karl Moody Currier, Brewer, Me.; treasurer—Raymond Hawthorne Harding, Kennebunk, Me.; sergeant at arms—Clarence Earl Libby, Albion, Me.

These officers will constitute the executive committee. The president will appoint committees of three on membership, entertainment and programme, who will assume their appropriate duties.

Nearly all of the seventy-two charter members have worked in a pulp or paper mill.

It is hoped that representatives of firms dealing in paper, pulp, supplies and machinery, may occasionally be induced to speak informally or be present at meetings of the society.

J. N. S.

Opportunities for Export Trade

PAPER BAGS WANTED

An American consular officer in Honduras reports that an importer desires to secure bids on 500,000 manila paper bags of the common square-bottom type. The sizes required range from one-fourth pound to 12 pounds. Quotations should be made f. o. b. New York or New Orleans. Correspondence may be in English. Refer to File No. 18872.

PAPER MACHINERY AND MATERIALS

An American consular officer in France reports that a commission agent in his district desires to represent, on a commission basis, American manufacturers and exporters of all articles and raw materials required in the paper trade. Reference is given. Quote File No. 18848.

AN INQUIRY FROM URUGUAY

A commission house in Uruguay has informed an American consular officer that it desires to represent American manufacturers of printing, writing, and binding paper and cardboard boxes. Correspondence may be in English, but Spanish is preferred. Refer to File No. 18881 in corresponding with the Bureau of Foreign and Domestic Commerce.

International Engineering Congress Album

The Publicity Division of the Westinghouse Electric & Manufacturing Company, 165 Broadway, New York, has favored PAPER with a copy of an album of views prepared for the International Engineering Congress which met at San Francisco last September. The views are of scenery en route and of the Panama-Pacific International and the International Panama-California Expositions. The book is entitled "Across the Continent." It contains 133 separate photographs reproduced by the halftone process and printed in Duotone ink. The paper has been pebbled after receiving the impressions of the cuts, and the result is surprisingly good, the pictures having the appearance of expensive chromolithographs. The effects are unusual for straight halftone work. The album was compiled by and presented to the visiting engineers with the compliments of the Westinghouse Electric & Manufacturing Company.

Kalamazoo Paper Man's Success as Director

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Oct. 26.—It is generally admitted that when a successful paper manufacturer takes hold of a problem, he works it out successfully. That is what Frank H. Milham, president of the Bryant Paper Company, has just done. Mr. Milham was made general director of Kalamazoo's recent prosperity week celebration. The celebration passed off most successfully. But that is not the interesting part.

When an affair similar to what was staged in Kalamazoo takes place, there is generally a great big deficit for some one to make up. It was Mr. Milham's aim from the first to see that nothing of this kind should happen as the result of the prosperity celebration. The treasurer has just completed his report. He will turn over to the Chamber of Commerce, of which Mr. Milham is president, nearly $3,000 over and above all expenses of the week. This is clear profit to the Chamber of Commerce and will be used to wipe out an old-time debt.

William H. Vinton Dies

[SPECIAL TO PAPER]

BRATTLEBORO, Vt., Oct. 26—William H. Vinton, senior member of the firm of W. H. Vinton & Son, paper manufacturers, died last Friday morning at his home, 15 Green street. He had been in failing health for the past two years but had been confined to his bed but for a few days.

He was born in Fitchburg in 1836 and came to Brattleboro at the age of eight. As a young man he entered the paper mill of his father Timothy Vinton, to learn the business, and after the death of his father in 1890 he continued the business, taking in his son William B. Vinton as a partner. He served in many town offices and was prominent in Masonic circles, being a 33d degree Mason.

The Pulp and Paper Trade of Austria

The increasing use of woodpulp in Austria-Hungary and a woodpulp substitute for jute are subjects of comment in a report from Consul General Albert Halstead, of Vienna, which is published as a supplement to *Commerce Reports* for October 6, 1915.

With the increased demand for paper and the discovery that woodpulp could be advantageously used and obtained at a low price a fresh impetus was, Mr. Halstead says, given to the papermaking industry of Austria, because it was so favored by the densely wooded forests of its mountain ridges. The use of woodpulp, combined with the world-wide tendency toward amalgamations, resulted in the establishment of great paper mills in the vicinity of the forests in Lower Austria, in the Alps regions, and in the mountains of Bohemia. As a result of this union of enterprise Austria has an international market for its paper, and this, in combination with paper products, forms one of the most important of Austrian exports, the normal value of which exceeds $12,000,000 annually; American purchases, however, are not important. The enormous consumption of wood pulp has resulted in a rise in the price that has acted unfavorably, and for this and other reasons this trade has suffered somewhat in the last two or

Why Try to Outbid the War God?

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Why should you, the user of belting, pay this "war tax" on leather when you can buy rubber belting from us at "peace prices"?

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three years. The largest export of the paper industry to the United States is in the form of cigarette paper, which shows signs of great growth.

The jute industry is of some importance, but is necessarily handicapped by the fact that its raw material must all be imported. It was rather fortunate that the year 1913 had found a comparatively small demand for the jute product, because it ended with a supply on hand that was greater than usual. This industry exports to various countries a considerable amount of its products. Since the cutting off of the supply of raw jute it has been found necessary to use a substitute, a woodpulp product of German invention. This can not as yet be produced in sufficiently large quantities, but it may, when fully developed, prove to be a cheap substitute for jute. It may be remarked that the scarcity of various kinds of raw materials in Central Europe may result in finding substitutes for the raw materials that come from abroad, which will affect many industries and give them an economically beneficial independence. While information as to substitutes that have been found is not available, there are indications that in one or two lines considerable success has been achieved.

Why Not Plant Forest Trees This Fall

Trees grow like weeds in New York and outside of the absolutely barren knobs of the Adirondacks and Catskills, there is hardly a square foot in the State that will not produce a good tree. The New York State College of Forestry is opposed to using land that has any value whatsoever for agricultural purposes, but the studies which the college has been making of forest conditions in the State for the past four years shows that there is really a vast amount of land scattered in small parcels throughout the State which must be in forest to give the best results. Nature starts the growth of vegetation in the spring and as a rule that is the best time of the year to plant trees, but it is also the busiest time and because of the difficulty of getting labor in the spring many people do not plant trees who would otherwise be doing more or less planting.

Nearly all of the pines and spruces which will grow in New York complete their season's growth in the summer and by the last of August have passed into their winter condition. From this time until the final freezing of the soil these species can be dug, transported and replanted with very little danger and give promise of success. It is well to finish planting several weeks before final freezing so that the fall rains will pack the soil firmly around the roots, thus preventing deep freezing which is apt to heave the little trees out of the ground in the spring.

The European larch and the broad-leaf trees, such as ash, basswood and tulip are not as well suited to fall planting as are the evergreens. The growth of these trees is not completed until quite late in the fall and they should not, therefore, be removed from the ground until the leaves have fallen. This does not occur often until after the first frost, so that the season for fall planting of these species is much more restricted. They can be planted, however, during hıakalhh restricted. They can be planted, however, if unusual care is taken to see that the soil is firm about the roots and during the first winter fresh soil, in which there is no manure, is piled around the roots for protection against frost.

The New York State College of Forestry, at Syracuse is maintaining in the State Forest Station at Syracuse an experimental nursery where more than a million trees are produced annually. The college invites inspection of this forest nursery and of the experimental work being carried on in the Station. It will be glad to give information at any time regarding the kinds of trees that are best suited to different soils, methods of planting, care of trees after planting, etc. It is surprisingly easy to start a thousand evergreens and until one has planted these they will not appreciate the pleasure of watching the development of a plantation of little trees. School children may be of distinct service to the State by planting a thousand trees on some bit of idle land near the school. The College of Forestry is ready to help such schools as wish to begin planting by aiding in the securing of the trees and in sending out of a trained forester to supervise the work. Last spring nearly a dozen schools in the State planted a thousand or more trees each, under the direction of the college.

Scarcity of Alum in Norway

The paper mill of A. S. Holmen-Hellefos, near Drammen, was recently compelled to suspend operations, owing to lack of alum. The manager, V. J. Mohn expressed the opinion that during the war, now that the price of alum has increased five-fold, it would certainly pay to establish a Norwegian alum factory, which however would be compelled to import most of the raw material. About 100 years ago there was a Norwegian alum factory at Oslo, near Ekeberg, which utilized the alum shale of Ekeberg.

Crisis in the Russian Paper Industry

ACCORDING to *Nowoje Wremja*, the Waldhof mill, with an annual output of about six million pud (220,000,000 pounds) of cellulose has suspended operations. As in the meantime the cellulose mill in Wazlawsk, of about two million pud (73,000,000 pounds) yearly output, is in the possession of the German forces, the falling off in cellulose production in Russia amounts to about 50 percent of the total output. Russia is consequently dependent on imports from Finland and the northern countries. As cellulose from Finland must pay a duty of 45 copecks (about 25 cents) per pud of 36.7 pounds, and imports from northern foreign countries 62 copecks (about 31 cents) per pud, 'there has been a great increase in price, amounting, on newsprint, to 30 percent, and on book paper and other kinds to much more.

Paper Packing Twine

THERE is an increasing demand in Germany for paper twine, the raw material for the manufacture of packing twine from hemp or jute being excessively scare. Our Berlin contemporary, the *Papierzeitung*, has reported on some specimens of paper twine and cord, as follows:

The cord is spun from strips of brown or white craped thin cellulose paper and is of 1.5 to 2.5 millimeters in thickness. Its breaking strength cannot be compared with hempen cord of the same thickness, but it will answer for many purposes, and as its cost is correspondingly lower, there is at present a lively demand for this product. The few mills that are making this paper string cannot by any means supply the demand.

The *Papierzeitung* is in receipt of the following communication from Ferdinand Emil Jagenberg, of Düsseldorf, on this subject:

"I have been compelled of late to equip myself, on a large scale, for the production of paper string because I have encountered difficulties with the large string factories, as these firms lack the courage to install larger machinery plants for spinning paper into twine. Paper manufacturers and dealers have likewise failed to bestow the necessary attention on the matter, so that at present I am excessively busy. I am, however, now in the position to turn out daily, in round figures, 1,000 kilos [2,200 lbs.] of paper twine, and contemplate increasing this equipment threefold in a few weeks.

"As I am at present very busily occupied with making paper spinning machines for paper-fabric yarn, and am compelled to employ in this branch all available working forces and have also accepted very considerable and important army contracts, which demand very exact and careful work, it is at present impossible for me to undertake the manufacture of paper cordage machines for sale."

The Russell Paper Bulker

Patented July 13, 1915

The Standard for measuring the Bulk of Paper, recording accurately the Bulk of any Book, number of Sheets, or Dummy up to four inches in thickness, under pressure of from one to fifty pounds per square inch on surface of paper.

Price, terms, and full particulars from

Ticonderoga Machine Works

TICONDEROGA, N. Y.

Manufacturers of Improved Warren Patent Double Drum Winders, Improved Calender Doctors, and other Paper Mill Specialties.

The Mullen Paper Tester

Measures the bursting strength of all kinds of paper and boards. The paper is firmly clamped against a rubber diaphragm through which is applied the direct fluid pressure on a square inch circular area. The pressure required to burst the paper is registered on an accurate gauge of suitable form, reading in pounds per square inch. This is the test required by the United States Government on all Government paper supplies.

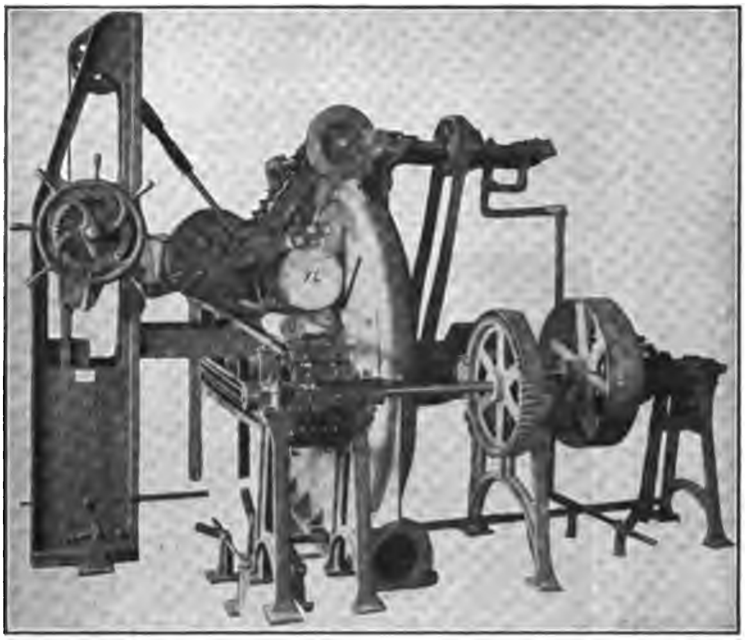
The Mullen Tester

is now used by the great majority of paper manufacturers and dealers and by leading paper buyers.

Write for further particulars about the new compensating lever clamp.

B. F. Perkins & Son, Inc. **Holyoke, Mass.**

The LeMoine & Schafer Barker Attachment Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today

The Appleton Machine Co.

APPLETON, WIS., U. S. A.

THE MARKETS

New York, October 26, 1915.

MECHANICAL PULP

The situation of the market remains practically as last reported, prices being nominally steady at the quoted range of $15.50 to $16.50, as to quality and quantity. In most sections newsprint mills are taking full advantage of the favorable water conditions by operating their wood grinding mills to full capacity. Dealers in consequence report a dull market with little or no demand. This condition is compensated to some extent by a larger export demand from Europe, sizable lots being disposed of in this way by both Canadian and domestic mills, and values are fairly well sustained. Dealers continue to quote from $15.50 to $16.50 f. o. b. grinding mills. In most quarters a more optimistic feeling prevails and holders appear less anxious to grant concessions in prices as they look forward to a slow but gradual improvement in values throughout the remainder of the year.

DOMESTIC AND FOREIGN CHEMICAL PULP

Conditions governing the market for foreign cellulose are rather peculiar. The high range of prices asked by Scandinavian mills led many paper mills to refrain from purchasing supplies, as the feeling prevailed that values abroad had reached highest levels. Importers having orders on hand are, however, finding considerable difficulty in placing them, despite the offering of full prices, stocks being limited at primary foreign sources. A continued active demand from European mills is taxing the Scandinavian output to fullest extent and delays in deliveries of supplies to England, France and Italy are becoming more frequent. This accounts in part for Scandinavian shippers neglecting the American markets. Trading in dock lots locally is practically at an end, owing to the limited supply available. Some importers predict sharp advances in price on bleached and unbleached chemical pulp, in view of an expected shortage in stocks before the close of this year.

Sulphite, foreign—		**Soda, domestic—**	
Bleached, ex-dock	3.00 @ 3.15	bleached delivered	2.20 @ 2.30
Unbleached, ex-dock	1.95 @ 2.05	Scandinavian Kraft	1.90 @ 2.00
Sulphite, domestic—			
Bleached, ex-dock	2.70 @ 2.85		
Unbleached, ex-dock	2.00 @ 2.20		

BAGGING, ROPE, ETC.

The demand for bagging and rope is brisk and fairly large sales are reported for the week just ended. Holders are adhering firmly to current quotations and in some instances have withdrawn offerings, in the expectation of getting higher prices later on. Recent arrivals of bagging were rapidly taken up by paper mills at full asking prices, and spot stocks of gunny are inadequate to meet the requirements of consumers. Numerous sales of rope are reported at full asking prices. Quotations on most lines closed strong and fractionally higher.

Gunny, No. 1	1.87 @ 2.00	Wool Tares, light	1.70 @ 1.75
No. 1 Mill run	1.50 @ 1.70	Wool Tares, heavy	1.65 @ 1.70
Domestic	1.65 @ 1.75	Foreign Manila rope	2.65 @ 2.75
Light Burlap	1.65 @ 1.75	Domestic Rope	2.80 @ 2.85
Mixed Bagging	1.05 @ 1.10	Mixed Rope	1.10 @
Sound Bagging	1.25 @ 1.30	Flax Waste	3.50 @ 4.05

IMPORTED RAGS

Inquiries for rags of various descriptions are being more freely received and prices rest on a firm basis, though quotations are nominally unchanged. Recent arrivals were heavier, without, however, having any special effect on the market, the bulk of supplies having been sold prior to shipment. Steady withdrawals from local warehouses have reduced the spot supply and should the movement continue throughout this month a scarcity of spot stocks is likely to ensue. Most dealers are naming slightly higher prices and general quotations show fractional gains.

German Blue Cottons	2.20 @ 2.25	German Linen Blues	3.50 @ 4.20
Dutch Blues	2.20 @ 2.30	German Linen, Gray	4.50 @ 5.50
French Light Blues	2.20 @ 2.45	German S. P. F's	3.50 @ 3.60
New Light Prints	3.75 @ 4.50	German Light Prints	2.00 @ 2.45
New Mixed Prints	3.00 @ 3.50	Dark Colored Cottons	1.15 @ 1.20

DOMESTIC RAGS

Prices are developing an upward tendency under a further slight improvement in the demand. In some instances dealers have been unable to book orders, owing to the rapid exhaustion of their stocks. Slow collections of rags and prospects for a heavier movement are influencing holders to firmer views as regards prices. The better and lower good graded qualities are attracting most attention, while other varieties are also in good demand. Quotations closed firm, showing slight appreciations in value.

New Shirt Cuttings, No 1	5.25 @ 5.45	No. 1 Whites	2.75 @ 3.20
New Shirt Cuttings, No. 2	3.50 @ 3.70	Soiled Whites, street	1.20 @ 1.30
Fancy Shirt Cuttings	3.35 @ 3.65	Soiled Whites, house	1.80 @ 1.90
New Blue Cottons	2.75 @ 3.20	Thirds and Blues	1.45 @ 1.65
New Dark Cotton	1.50 @ 1.70	Satinette Garments	1.15 @ 1.25
New Unbld Cuttings	5.50 @ 6.00	No. 3 Satinettes	1.05 @ 1.10
New Black Cottons	1.75 @ 1.95	No. 4 Satinettes	.90 @ .95
		No. 1 Tailor's Rags	.75 @ .80

TWINES

The market is stronger in sympathy with the increased cost of jute, which was brought about by an enhanced demand for this fiber from England, resulting in light offerings, owing to limited available supplies. Manufacturers locally announced an advance of 2 to 2½c a pound on grades and kinds of twine, while rope descriptions are unchanged, but firm. Hard fiber cordage continues to offer at previous prices, while papermaker's and other finished jute twines are held at a slight advance in price. Export inquiries continue brisk, while orders booked for domestic account for the week just ended are moderate.

Sisal Hay	8½ @ 9	Jute Twines, 36	13¼ @ 13¾
Sisal Lath Yarn	8 @ 8½	Jute Twines, 46&60	13¾ @ 14
Manila Rope	12½ @ 13	Jute Twines, 4½&6	9 @ 9½
Manila Rope, No. 2	11½ @ 12	Paper Makers' Twine	8 @ 8½
Jute Rope	6¼ @ 7¼	B. C. Hemp, 18	19½ @ 19¾
Jute Wrapping Twines— 2 to 6 ply—		B. C. Hemp, 18	19 @ 19½
No. 1	12½ @ 13	B. C. Hemp, 36	18½ @ 18¾
No. 2	10½ @ 11	Amer. Hemp, 4½&6	17 @ 17½
Jute Twines, 18	14¼ @ 15		
Jute Twines, 24	14¼ @ 14½		

OLD PAPERS

The demand continues active and prices are maintained firmly. With little prospects for larger collections and a steady growth of the buying movement, dealers look for scarcity of spot supplies in the near future. Common and

Continued on page 36

Telephone {1700 1701} Broad Cable Address, "Lagerlot Newyork"
Scandinavian-American Trading Company
PRODUCE EXCHANGE BUILDING, NEW YORK
IMPORTERS AND EXPORTERS OF
FOREIGN AND DOMESTIC
WOOD PULP
OF ALL KINDS
AND
PAPER MILL SUPPLIES
HANS LAGERLÖF, Pres.

Use Positive Filling

Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

FOR the want of a nail the shoe, horse and man got lost, and on account of one poor piece of wood, and one loose knife the whole Filling was wrecked. Every time a Wood and Steel filled Jordon goes out it throws an undue strain on the rest of the Engine, and everything connected with it. Use our Positive Fillings; they don't tear out; they reduce your manufacturing cost, and increase your production. That spells "PROFIT."

Correspondence from any mill invited

BAHR BROTHERS MANUFACTURING CO.

211 I. O. O. F. BUILDING MARION, IND.

SINCE 1878

BUCHANAN & BOLT WIRE CO.

HOLYOKE, MASS.

OUR SPECIALTY

FINE WIRES FOR MAGAZINE AND BOOK PAPERS

Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires

Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.

QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON

Foreign & Domestic
RAGS & PAPER
STOCK
New Cuttings, Jute Stock
Sizing
SULPHITE &
SODA PULPS

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L. L. BROWN PAPER CO.

Adams, Mass.

Makers of First Class

LINEN LEDGER and RECORD PAPER

for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records

Ledgers
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TRADE MARK

Brown's Papers have always received the highest awards whenever exhibited in competition with other makes

Mills established 1850

The Watermark of Quality

LONDON: TEMPLE BAR HOUSE, 28 FLEET ST.

SYDNEY MELBOURNE WELLINGTON BOMBAY

Parsons Trading Company

Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

better graded higher qualities of papers are attracting more attention. Stock is held and selling at current quotations, though dealers name the inside range of figures as positively lowest. Slight revisions in the nature of advances in quotations were effected and these are noted below.

No. 1 Hard White Shavings	2.35 @ 2.40
No. 2 Hard White Shavings	1.95 @ 2.00
No. 1 Soft White Shavings	1.70 @ 1.75
No. 1 Colored Shavings	.80 @ .85
No. 2 Colored Shavings	.60 @ .65
Magazine Flat Stock	.80 @ .85
No. 1 Crumpled	.70 @ .75
Solid Ledger Stock	1.75 @ 1.80
Ledger Stock	1.35 @ 1.45
White Blank News	1.00 @ 1.05
Extra Manila Cuttings	.90 @ .95
New Manila	1.30 @ 1.35
No. 1 Manila	.65 @ .70
No. 2 Manila	.35 @ .40
Box Board Chips	.30 @ .35
Bogus and Mill Wrappers	.42 @ .45
Strictly Overissue News	.50 @ .55
No. 1 Mixed	.30 @ .32
Folded News	.35 @ .40
Common Papers	.25 @ .30

CHEMICALS

The market for papermaker chemicals is decidedly firmer. The demand continues good but spot stocks for prompt delivery are difficult to place. A decided scarcity of supplies of bleaching powder led to higher prices, holders naming 3¼c and upward for spot lots as to quantity; domestic grades are heavily oversold which accounts for the absence of offerings of parcels for prompt and nearby deliveries. Caustic soda is in a similar position and the output for next year is sold up; contracts covering 1916 delivery closed at 2½c to 2⅝c a pound for 60 percent. Dealers are quoting 5¼c and upward to the home trade. Prices of sal soda show a sharp advance; holders are naming .60c and upward for supplies in barrels, f. o. b. shipping point, while for spot lots of concentrated 1½c and upward is named by dealers.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended October 23, 1915

WOODPULP

M. Gottesman & Son, str. Oscar 2nd, Copenhagen, 750 bs. (150 tons) dry sulphite.
Felix Salomon & Co., by same, 1,194 bs. (240 tons) dry sulphite.
G. Amsinck & Co., by same, 600 bs. (120 tons) dry sulphite.
E. Butterworth & Co., by same, 656 bs. (131 tons) dry sulphite.
J. Andersen & Co., by same, 5,200 bs. (1,040 tons) dry sulphite.

MISCELLANEOUS PAPER.

Salomon Bros. & Co., str. Esperanza, Vera Cruz, 90 bs. cotton waste.
Baeder, Adamson & Co., str. Oosterdyk, Rotterdam, 109 lbs. picker waste.
Perkins, Goodwin & Co., by same, 86 bs. pressed old cotton rags, 76 bs. old bagging.
Castle, Gottheil & Overton, str. Devon City, Havre, 187 bs. rags.
E. Butterworth & Co., str. Georgic, Liverpool, 80 bs. bagging.
Castle, Gottheil & Overton, str. Oscar 2nd, Copenhagen, 989 bs. old rope.
Felix Solomon & Co., str. Chicago City, Swansea, 337 bs. new cuttings.
Brown Bros. & Co., str. Djbouti, Marseilles, 54 bs. paper stock.
Marx Maier, by same, 105 bs. old rope.
Baring Bros. & Co., by same, 235 bs. cotton waste.

MISCELLANEOUS PAPER STOCK

Marx Maier, str. Isle De Reunion, Marseilles, 106 bs. old rope, 75 bs. bagging, 40 bs. hemp waste.
Marx Maier, str. Cairnhill, Brest, 131 bs. bagging.
Marx Maier, str. Cavour, Manchester, 435 bs. bagging.
Brown Bros. & Co., str. Baltic, Liverpool, 65 bs. old rags.
T. oByd & Co., by ame, 38 bs. scrap bagging.
E. Butterworth & Co., str. Stephano, Halifax, N. S., 38 bs. old rope.
Salomon Bros. & Co., str. Esperanza, Vera Cruz, 90 bs. cotton waste.

CHEMICALS

J. L. & D. S. Riker, str. Lapland, Liverpool, 50 cs. bleaching powder.
Troy Laundry Machine Co., by same, 50 cs. bleaching powder.
Moore & Munger, str. Chicago City, Swansea, a quantity of china clay.

OTHER PORT MANIFESTS

AT NEWPORT NEWS

Scandinavian-American Trading Co., str. New Sweden, Gothenburg, 4,200 bs. (600 tons) dry sulphite woodpulp.

AT BALTIMORE

Scandinavian-American Trading Co., str. New Sweden, Gothenburg, 1,425 bs. (285 tons).

AT PHILIDELPHIA

Felix Salomon & Co., str. New Sweden, Wallvik, 1,500 bs. (300 tons) unbleached sulphite woodpulp.
Brown Bros. & Co., by same, Skutskar, 800 bs. dry sulphite woodpulp.
Felix Salomon & Co., by same, 1,160 bs. (232 tons) unbleached sulphite woodpulp.
Perkins, Goodwin & Co., by same, 1,600 bs. (320 tons) dry sulphite woodpulp.
Price & Pierce, by same, Gelfe, 500 bs. (100 tons) dry sulphite woodpulp.
Guaranty Trust Co., by same, Gothenburg, 1,100 bs. (220 tons) dry sulphite woodpulp.
Castle, Gottheil & Overton, by same, Christiania, 238 bs. rags.
Andrews & Co., by same, 1,576 bs. (315 tons) dry sulphite woodpulp.
E. Butterworth & Co., str. Tula, Copenhagen, 560 bs. (112 tons) dry sulphite woodpulp.
Price & Pierce, by same, 3,605 bs. (721 tons) dry sulphite woodpulp, 400 bs. (80 tons) perforated woodpulp.
Brown Bros. & Co., by same, 240 lbs. (48 tons) dry sulphite woodpulp.
W. Ayres & Co., str. Cornishman, Liverpool, 13 bs. woolen rags.
Guaranty Trust Co., by same, 44 bs. old bagging.
W. T. Tilden & Co., str. Annapolis, Leith, 42 bs. jute waste.
Castle, Gottheil & Overton, by same, 245 bs. jute thread waste.
Am. Exch. Natl. Bank, by same, 58 bs. old bagging.
Marx Maier, str. Annapolis, Glasgow, 58 bs. bagging.

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Papermaking in Australia

According to a note appearing in the Sydney *Herald*, the Australian Government is seeking to have its supplies of paper produced locally. With this object in view, the Government proposes to give a five years' contract, embracing orders for $2,500,000 on the understanding that in two years the necessary plant is established here to manufacture supplies for three years. It will be open to the contractors to procure the first two years' supplies from any part of Australia.

Tests are being conducted at the Sydney Technical College with various timber grown in the State to see whether any will produce a satisfactory woodpulp for papermaking. So far ironbark, contrary to all anticipations, has yielded the most promising results. On present indications, however, it looks as if local paper manufacturers would have to depend, for the present at all events, on imported woodpulp.

Paper and Pulp in Indo-China

With the industrial development of Tonkin during the past few years, two mills have been established for the manufacture into paper or paper pulp of the abundant supply of suitable wood growing along the banks of the Rouge river and its tributaries. The subject is discussed by Consul Lawrence P. Briggs, in a report to the Department of Commerce, dated Saigon, August 12, which is reproduced in *Commerce Reports* for October 5, 1915.

The Société des Pulpes et Papeteries du Tonkin has its main office at Haiphong, but its mills are located at Vietri at the junction of the Rouge and Claire rivers. This company was organized in 1910 with a capital stock of 660,000 piasters (a little more than $300,000). Its machinery was imported in 1911 from the United States and Europe, and the mill began to operate in April, 1912. So far this mill has not attempted the manufacture of paper, but has been engaged in the manufacture of pulp from bamboo. Its capacity is said to be 3,000 to 4,000 tons a year.

During 1912 the company exported five tons of paper pulp to France and fourteen tons to Hongkong. The exports to France were largely experimental, and the French manufacturers were well pleased with the product. During the next year 210 tons of pulp were sent to France and sixty-nine tons to foreign countries. The pulp is said to have been very satisfactory and to have sold in the London market for as much as £13 a metric ton ($63.26 per 2,204.6 pounds). During the first three-quarters of 1914, 314 tons were exported to France and twenty-two tons to foreign countries. The outbreak of the war deprived this industry of its French market and high freight rates have closed other European markets to it. Consequently, the mill closed in September and has not since reopened. The subsequent rise in the price of caustic soda has made it impossible to manufacture pulp for less than 110 piasters (a little more than $50) per metric ton f. o. b. Haiphong. The company is ready to resume operations if it can secure an order for 1,500 tons at this price.

The Société Anonyme de Papeteries de l'Indochine was organized in 1913 with a capital stock of 1,500,000 francs (about $300,000). Its headquarters are at Grenoble, France. Its plant, located at Dap-Cau, near Hanoi, was constructed during 1914 and began operations during the latter part of that year. This plant manufactures paper out of various woods and plants, using only a small proportion of bamboo. The company has had no trouble finding a local market for its product.

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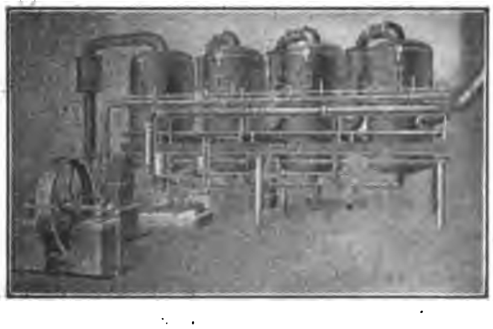

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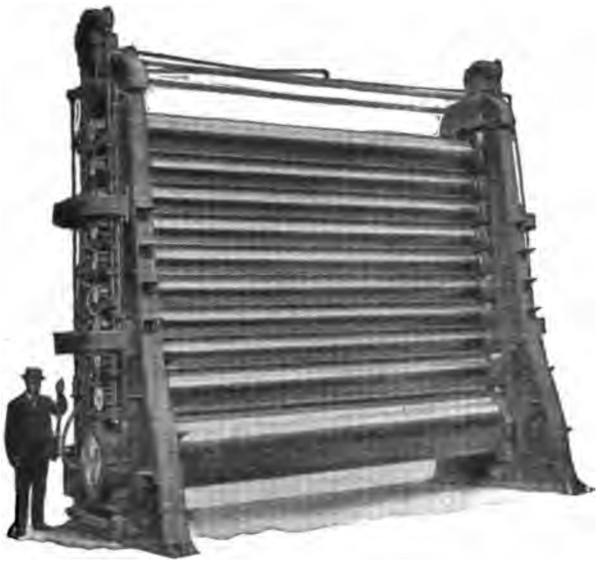

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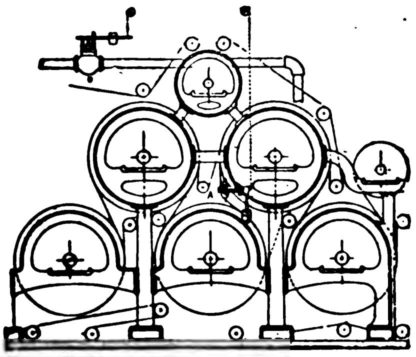

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Buffalo Forge Co., Buffalo, N. Y.
Garland Co., Bay City, Mich.

CORDAGE
Columbian Rope Co., Auburn, N. Y.

COUPLINGS
(Flexible)
General Electric Co., Schenectady, N. Y.

CUTTERS
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.

CYLINDER MOLDS
Black-Clawson Co., Hamilton, O.
Cheney Bigelow Wire Wks., Springfield, Mass.
Dilts Machine Works, Inc., Fulton, N. Y.
Eastwood Wire Mfg. Co., Belleville, N. J.
Improved Paper Machinery Co., Nashua, N. H.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

CYLINDER WIRES
Appleton Wire Works, Appleton, Wis.

DAMS AND RESERVOIRS
Field, William T., Watertown, N. Y.

DANDY ROLLS
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cheney Bigelow Wire Wks., Springfield, Mass.

DECKLE WEBBING
Morey & Company, Boston, Mass.

DIAPHRABMS
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

DIGESTERS
International Process Co., New York.
Swenson Evaporator Co., Chicago, Ill.

DIGESTER LININGS
Preston's Digester Lining Co., Ltd., Radcliffe, England.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

DRAINER BOTTOMS
Snell, Samuel, Company, Holyoke, Mass.

DRYER FELTS
Fitchburg Duck Mills, Fitchburg, Mass.
Morey & Company, Boston, Mass.

DRYING MACHINES
Buffalo Forge Co., Buffalo, N. Y.

DUSTERS
Noble & Wood Machine Co., Hoosick Falls, N. Y.

DYESTUFFS
Farbwerke-Hoechst Co., New York.
Heller & Merz Co., New York.
Klipstein & Co., A., New York.

ELECTRIC DRIVES
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC GENERATORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC TRANSFORMERS
General Electric Co., Schenectady, N. Y.

ELEVATORS
(Portable)
Economy Eng. Co., Chicago, Ill.

ENCLOSED ARC LAMPS
General Electric Co., Schenectady, N. Y.

ENGINEERS
Barker, E. R., Boston, Mass.
Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Field, William T., Watertown, N. Y.
Little, Arthur D., Boston, Mass.
Scott & Co., Ernest, Fall River, Mass.
Smith, F. L., New York.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

ENGINES
Buffalo Forge Co., Buffalo, N. Y.
Westinghouse Machine Co., E. Pittsburgh, Pa.

EVAPORATORS
International Process Co., New York.
Scott & Co., Ernest, Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.

FANS
(Exhaust)
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

FASTENERS
(For Screen Plates)
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

FEED WATER PURIFIERS
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

FELTS AND JACKETS
Appleton Woolen Mills, Appleton, Wis.
Bulkley, Dunton & Co., New York.
Castle, Gottheil & Overton, New York.
Heimbach, Thomas Josef, Ltd., Düren, Rheinland, Germany.
Huyck & Sons, F. C., Albany, N. Y.
Lockport Felt Co., Lockport, N. Y.
Morey & Co., Boston, Mass.
Orr Felt & Blanket Co., Piqua, O.
Shuler & Benninghofen, Hamilton, O.
Waterbury Felt Co., Skaneateles Falls, N. Y.

FILTERS
Hungerford & Terry, Inc., Philadelphia, Pa.
Norwood Eng. Co., Florence, Mass.
Scaife & Sons Co., Wm. L., Pittsburgh, Pa.

FILTERING SYSTEMS
Improved Paper Machinery Co., Nashua, N. H.

FLAMING ARC LAMPS
General Electric Co., Schenectady, N. Y.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.
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Appleton Wire Works Co., Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm., Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES
Swenson Evaporator Co., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

GENERATORS AND MOTORS
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS
Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holvoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP
Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE
Fox Paper Company, Lockland, O.

HOSE
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

HYDROELECTRIC PLANTS
Field, William T., Watertown, N. Y.

JORDAN ENGINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

JORDAN LININGS
Bahr Bros. Mfg. Co., Marion, Ind.

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Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES
Dilts Machine Works, Inc., Fulton, N. Y.
L. & I. J. White Company, Buffalo, N. Y.

KRAFT PAPER
Berlin Mills Co., Portland, Me.
Fox Paper Co., Lockland, O.
Rantoul Co., C. W., New York.

KRAFT SODA PULP
Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

LININGS FOR SULPHITE DIGESTERS
Preston's Digester Lining Co., Ltd., Radcliffe, England.

LUMB GOVERNORS
International Process Co., New York.

LUMBER
Riordon Paper Co., Montreal, Quebec, Can.

MECHANICAL STOKERS
Westinghouse Machine Co., E. Pittsburgh, Pa.

METERS
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General Electric Co., Schenectady, N. Y.

MILL CONSTRUCTION
Field, William T., Watertown, N. Y.

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General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co. E. Pittsburgh, Pa.

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Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
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Glens Falls Machine Works, Glen Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Improved Paper Machinery Co., Nashua, N. H.
International Process Co., New York.
Jones & Sons Co., E. D., Pittsfield, Mass.
Lockport Machine Co., Lockport, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Eng. Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

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PAPER EXPORTERS
Berlin Mills Co., Portland, Me.
Cliff Paper Co., Niagara Falls, N. Y.
Fox Paper Company, Lockland, O.
Parsons Trading Co., New York.

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Castle, Gottheil & Overton, New York.
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Morey & Company, Boston, Mass.
Parsons Trading Co., New York.

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Cliff Paper Co., Niagara Falls, N. Y.
Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
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Williams, F. M., Watertown, N. Y.

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International Process Co., New York.
Westinghouse Machine Co., E. Pittsburgh, Pa.

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General Electric Co., Schenectady, N. Y.
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PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

PUMPS

Black-Clawson Co., Hamilton, O.
Buffalo Forge Co., Buffalo, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Glens Falls Machine Works, Glens Falls, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

RAG CUTTERS

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

Atterbury Bros., Inc., New York.
Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

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Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

REFINERS

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Voith, J. M., New York.

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ROLL BARS AND BEDPLATES

Dilts Machine Works, Inc., Fulton, N. Y.
Farnham Mfg. Co., Buffalo, N. Y.
Farrell Foundry & Machine Co., Ansonia, Conn.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

ROLLERS

Boston Belting Co., Boston, Mass.

ROSIN SIZE

Arabol Mfg. Co., New York.
National Rosin, Oil & Size Co., New York.
Vera Chem. Co., N. Milwaukee, Wis.

ROTARY INCINERATING FURNACES

Scott, Ernest, & Co., Fall River, Mass.

RUBBER PRODUCTS

Fitchburg Duck Mills, Fitchburg, Mass.

SAVE-ALLS

Glens Falls Machine Works, Glens Falls, N. Y.

SCALES

Howe Scale Co., New York.

SCREENS

Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

SCREEN PLATES

Hardy & Sons, Wm. A. Fitchburg, Mass.
Union Screen Plate Co., Fitchburg, Mass.

SCREWS

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SHEATHING PAPER

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SIZINGS

Arabol Mfg. Co., New York.
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Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

SPIRAL PIPE

American Spiral Pipe Works, New York.

STEAM REGULATORS

Pickles, W. F., Buckland, Conn.

SUCTION PLATES

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SULPHATE PULP

Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

SULPHITE FITTINGS

Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

SULPHITE MILL EQUIPMENT

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Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
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Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

SULPHUR

Union Sulphur Co., New York.

SULPHUR BURNERS

Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Cc., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

SWITCHBOARDS

General Electric Co., Schenectady, N. Y.
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Economy Eng. Co., Chicago, Ill.

TRANSFORMERS

General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TRUCKS

Howe Scale Co., New York.

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(Steam)

General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

TWINES

Columbian Rope Co., Auburn, N. Y.

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St. Regis Paper Co., Watertown, N. Y.

ULTRAMARINE

Heller & Merz Co., New York.

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Buffalo Forge Co., Buffalo, N. Y.
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WATER-COOLING TOWERS

Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS

Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS

Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS

Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

WELDING OUTFITS

(Arc)

General Electric Co., Schenectady, N. Y.

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Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES

Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks, Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wisconsin Wire Wks., Appleton, Wis.

WOOD PRESERVATIVE

Carbolineum Wood Preserving Co., Milwaukee, Wis.

WOODPULP IMPORTERS

Andersen & Co., J., New York.
Atterbury, Bros., Inc., New York.
Castle, Gottheil & Overton, New York.
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Price & Pierce, Ltd., New York.
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FOURDRINIER WIRES
BELLEVILLE, NEW JERSEY. U.S.A.

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Classified Advertising Page

Advertisements for this page will be accepted at the rate of 10 cents a line, each insertion, cash to accompany order. A line averages seven words.

There is no quicker, cheaper or better way of filling your wants than through this Classified Section.

Situations Wanted

EMPLOYERS WANTING HELP should send a statement of their requirements to the Labor Bureau of PAPER, 117 East 24th street, New York City. Applications for work are constantly being received from men in all parts of the country.

Paper Expert

PAPERMAKER—With an expert knowledge of qualities desires a position in the jobbing field, or in the paper department of some publishing house; references furnished. Address H care of PAPER.

Millwright

FIRST-CLASS MILLWRIGHT wants position in a paper mill; steady and reliable; references; state salary when writing W. M. S., care of PAPER.

Mechanical Engineer

MECHANICAL ENGINEER AND DRAFTSMAN desires position. Ten years experience in paper machinery shops, paper and pulp mills. Mill preferred. Address J. E. H., care of PAPER.

Chemical Engineer

CONTROL CHEMIST AND ENGINEER—a graduate of Massachusetts Institute of Technology, class of 1913 desires position. Has had two years experience in the testing and control of paper and sulphite mill supplies and products. In addition is a good acid maker and cook. Moderate salary; good reference. Address F. H., care of PAPER.

Chemist

CHEMIST, B. S.—Desires to obtain position as superintendent or general manager of paper mill making high grade rag paper. Eastern university graduate. Has had six years' practical experience in making paper, papeterie, boxes, etc., and an opportunity to study the art of papermaking. At present employed as superintendent in a well known paper manufacturing concern. Age 26 years and married. Correspondence with reliable, well rated concerns invited. Best of references will be furnished. Write B. S., care of PAPER.

Superintendents

WANTED—Position as superintendent. Practical, thoroughly experienced in all grades of wrapping, including water-finish, bleached and unbleached color specialties. Extra good on colors. Address Technical, care of PAPER.

EXPERIENCED SUPERINTENDENT desires position in that capacity in a paper mill. Will consider position as assistant. Started in paper trade at the bottom and has been engaged in that trade for twenty years. Has been tour boss and night superintendent with good records. Sober and reliable. References if desired. Write Assistant, care of PAPER.

Head Finishers

EXPERIENCED HEAD FINISHER at present unemployed would like to get position. Experienced on tissues and light and heavy papers. Married; reliable. When writing please state wages, number of machines, etc Address E. C. B., care of PAPER.

HEAD FINISHER perfectly sober and reliable wants position. Has had considerable experience on supercalender book, manilas, dry finish wrappings, bonds, flat writings etc. Is practical supercalender man and has had some experience on tissues. Could qualify as mill salesman or assistant superintendent. Age 37; married. Can furnish excellent references. Address Finish, care of PAPER.

Boss Machine Tender

BOSS MACHINE TENDER would like position in mill in the middle west. Either day or night job. Experienced in all grades of paper. Address Boss, care of PAPER.

Situations Vacant

PAPERMAKERS OUT OF WORK, machine-tenders, beatermen and millwrights out of a position, are invited to send their qualifications, requirements as to salary, etc., to the Labor Bureau of PAPER, 117 East 24th street, New York City. Openings now exist for several workers.

Paper Finisher

WANTED—Position by paper finisher who has had four years experience in counting, tieing, sealing and cutting paper. Address Drawer T, Buena Vista, Virginia.

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MACHINE TENDER is wanted on a 134″ fourdrinier making both dry and water finish manilas and fibers. First class new Bagley and Sewall machine, new concrete and steel mill. Good hotel at mill or houses to rent. Write stating full particulars as to age, experience salary, and say whether union man or not. Manilas, care of PAPER.

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WANTED—Competent order and routing clerk in a western Massachusetts mill making writings and specialties. State full experience and salary wanted. Address Clerk, care of PAPER.

Draughtsman

WANTED—PAPER's Labor Bureau has an application for a draftsman who has had good experience in paper mill work and is competent to take charge of any work in the mechanical end of a large plant. Those qualified to fill a position of this kind should send particulars of experience, etc., to Rogers, care of PAPER.

Millwright

MILLWRIGHT, with knowledge of electric motors, generators, etc., is wanted by a paper mill in the East. Correspondence with experienced men only, who are able to furnish excellent reference is solicited. Address J. H., care of PAPER.

Chemical Engineer

WANTED—Energetic chemical engineer with knowledge of glue, glycerine, glycerine substitutes and paper. State age, experience and salary expected. Address 663 care of PAPER.

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MACHINE TENDER, BACK TENDER and also rewinder man on small rolls are wanted in an Eastern mill running on two shifts. Interested parties may get particulars, etc., on writing Machine Tender care of PAPER.

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FOR SALE—Three Matthews Patent Compensating Winders—Four shaft—for 128″ machine. Big bargains. Write Champion Fibre Company, Canton, N. C.

FOR SALE—44-inch paper slitter and rewinder. Address, Hubbs & Corning Co., Baltimore, Md.

For Sale—Paper Tester

FOR SALE—A Mullen paper tester. Has been out of the shop but two years and used very little. Cost $75.00, will sell for $50.00. Address T. S. Morris Company, Madison, Wis

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If you are seeking employment or an employee; if you are in need of second-hand machinery, or have some to dispose of; or if you have anything of interest to offer to the trade—you may realize your desire by placing a small Want Ad in PAPER.

PAPER covers the paper manufacturing industry thoroughly and its contents are carefully read and digested by the most prominent men in both the executive and mechanical ends of the business. Catch their eye and you get their attention.

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NOVEMBER 3, 1915

Vol. XVIII
No. 8

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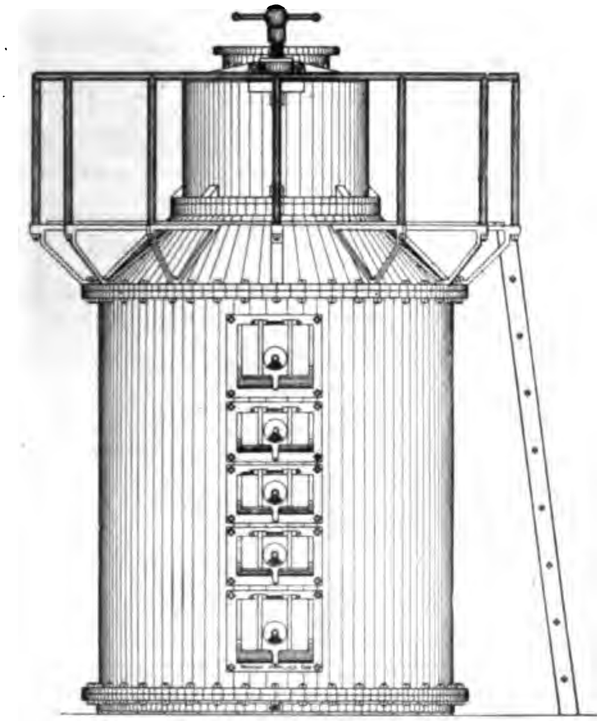

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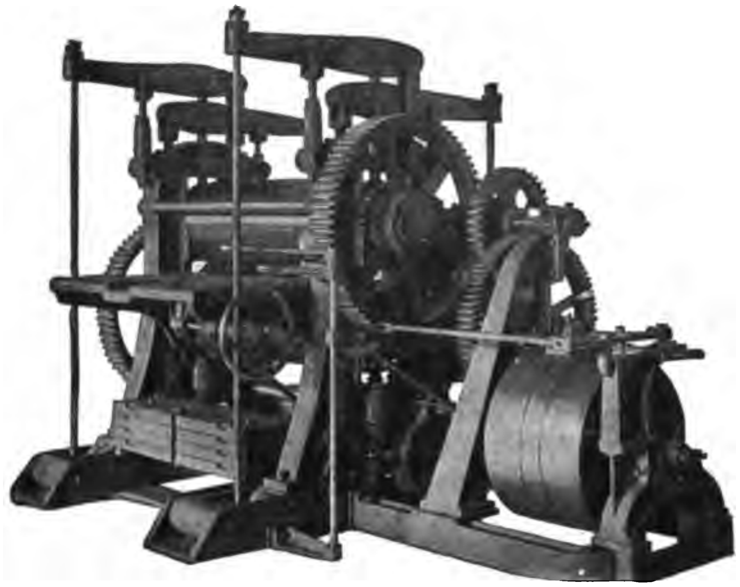

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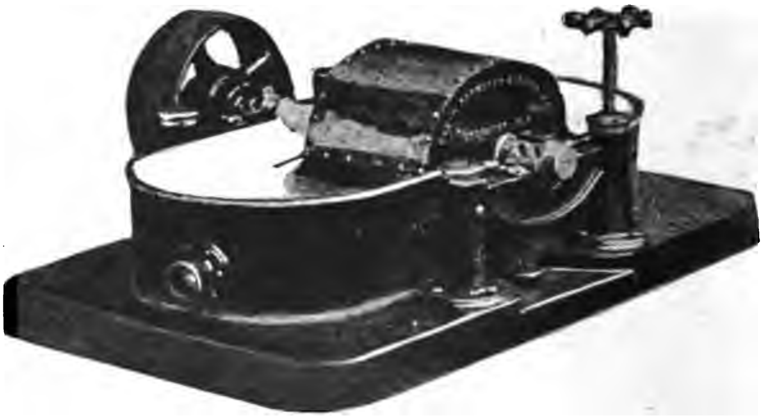

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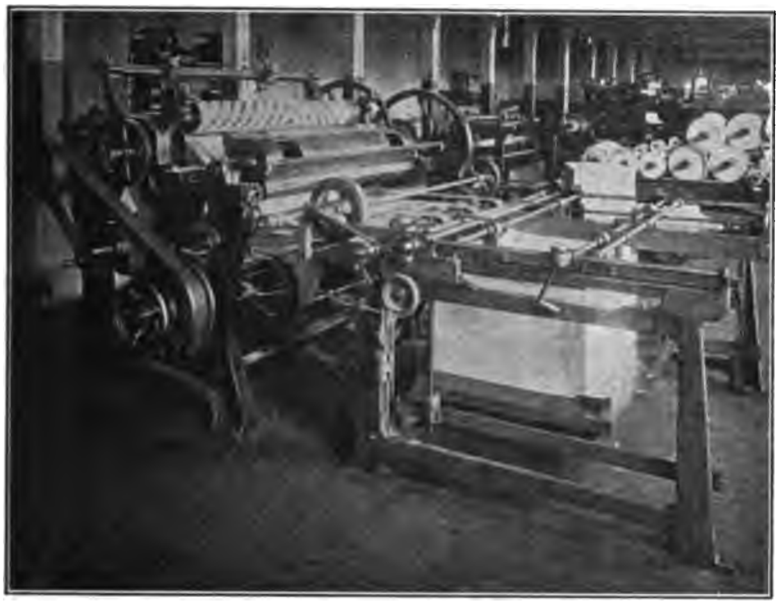

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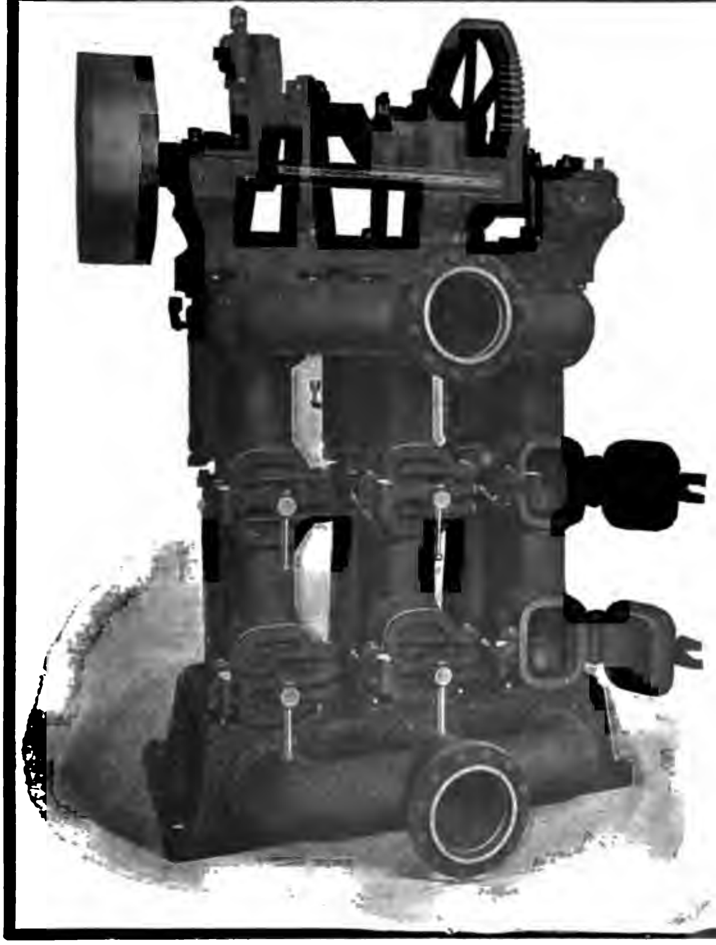

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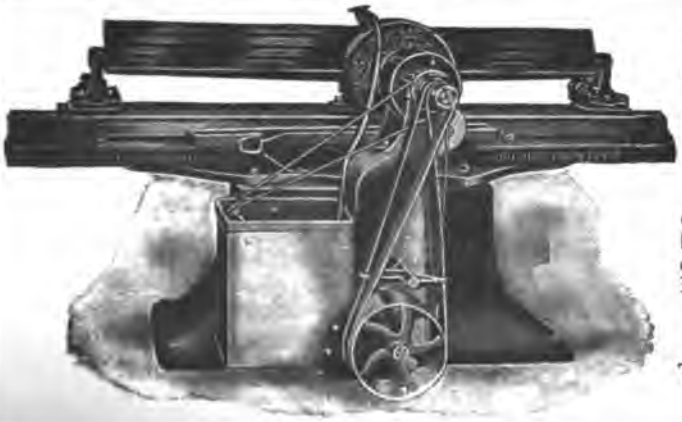

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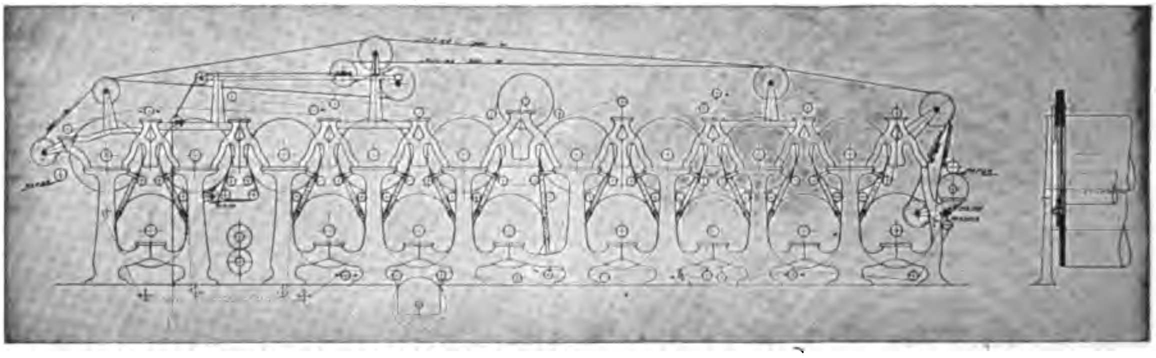

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Vol. XVII NOVEMBER 3, 1915 No. 8

Power Plant Economies for Paper Mills

Things About the Power Plant Worth Looking Into—The Value of a Capable Engineer

By R. L. ALEXANDER

New York

IN the management of the steam end of some power plants, and this applies particularly to paper mills, it sometimes appears as though those responsible for the operation of the plant were indifferent about questions of economy. The thing that is most important in the mind of the superintendent who knows something about engineering, steam, etc., is to "produce the paper" no matter what the cost. That is a logical way to look at it, of course, when the mill is rushed. But when the manager or superintendent or owner has time to look into the economy details, he should do so.

Take the matter of boilers, for instance. Have you enough boilers in your mill? That is, have you at least *one* spare boiler? You should have. It doesn't pay to operate boilers until they are jam full of scale and then do high speed cleaning on a Sunday or holiday. To clean a boiler it should be allowed to cool slowly of its own accord. Cold water should not be pumped into the boiler to cool it suddenly; cold water should not be dashed on the outside; and water should not be thrown on the grates to cool them off. Such sudden cooling is bad. The boiler contracts in direct proportion to the cooling and where one part is cooled more suddenly than another a distortion is likely to occur resulting in a bad leak. Tubes must be rerolled often; the seams must be caulked; and in other ways the boilers thus maltreated are liable to see an early finish.

One spare boiler will save this trouble and expense. Your men can allow the boilers to cool slowly and they can do the cleaning thoroughly and leisurely during their regular hours.

Feed water heaters, also, are good things to have about, for they save considerable money. By preheating the feedwater, utilizing steam from auxiliaries or from other sources that would otherwise be wasted, they save one percent of the coal for every eleven degrees increase in feed water temperature. Besides, they keep scale out of the boilers which alone is sufficient to pay for their installation.

There are numberless other things about the power plant that are worthy of attention when time permits. Perhaps you should use different power; perhaps you should use mechanical stokers; pressure and power recording devices; a CO_2 recorder, heavier belts; larger pulleys; or a steam meter. Have you ever thought of these things?

There is such a thing as "carrying things too far" of course, and that is a danger that must certainly be avoided. It does not pay to spend a thousand dollars for the sake of saving thirty dollars a year, nor forty, nor fifty, especially if you can get 5½ percent or more on your money in a safe investment. That is the pith of all arguments on economy.

But where "worth-while savings and earnings" can be made the means whereby the money can be saved should be thoroughly investigated. If you have not time to do the investigating yourself, appoint some competent person in your employ to do it for you. Or, if necessary, go outside of your own ranks for competent advice.

Take, for example, mechanical stokers and coal handling devices. Much saving is being effected along that line nowadays. I know of an instance where, formerly, the hand-fired boilers required nine coal passers and twenty-six firemen and ash handlers at a total expense of $58.50 a day for labor. Following the installation of additional boilers, mechanical stokers, an overhead bunker, and a suction ash conveyor for the removal of ashes, the operating force was reduced to two coal passers, two ash handlers, and six men for the conveyors and stokers. Total cost for labor, $17.00 a day, or a saving of more than $1,000 a month. Now,

$12,000 a year is a goodly saving. It is equivalent to the interest on $200,000 at 6 percent. Since the improvements cost only a fraction part of $200,000 the owners made a good investment.

The installation of a single steam water meter in a large factory has been the central cause of a saving of $50,000 a year. The steam meter detects leaks that are usually not detected otherwise. Many other examples could be named but it is not the object of the writer to go into details here. These are just general, broad hints.

A good way to learn about your power plant needs is to employ a good engineer—one who knows power plants. Tell him that you want to operate your mill economically, and sensibly at the same time. Tell him that you do not want "new-fangled" devices simply because they are new, but that you want those devices that lead to greatest ultimate economy. A good engineer will do these things without being told. You will usually find that engineers are a pretty intelligent lot and that their advice will do you much good instead of harm.

Then keep in constant touch with your engineer, show him that you have considerable confidence in him and his ideas and give him a reasonable amount of authority. Consider his advice carefully and talk things over with him. These little things all help.

Overcoming Evil Odors in Sulphate Mills

IT has been demonstrated by Professor Klason, of Stockholm, that the disagreeable odors produced in the soda-sulphate process of manufacturing pulp are due principally to organic sulphur combinations, especially methyl sulphide. The critical temperatures, which in the course of the recovery of the salts from the waste liquor cause the development of the malodorous organic sulphur combinations, are not to be avoided, according to experience. Klason has demonstrated, however, that by means of very large quantities of water, the organic sulphur combinations can be washed out of the waste gases from the salt recovery furnaces. This manner of elimination has so far not been practicable, the large quantity of water required making the process unprofitable and the removal of the evil could be effected only to a limited extent. According to Klason, for instance, a mill that produced daily only twenty tons of cellulose, had to deal every day with 350,000 cubic meters of waste gases from the salt furnaces, for which at least 10,000 cubic meters of water, to wash the organic sulphur combinations out of the waste gases, would be necessary. It would be necessary in this plant to treat 243 cubic meters of waste gas, with approximately 71,000 liters of water, to eliminate the malodorous combinations.

All plants previously constructed for the washing of waste gases have proved failures, because in practice only a fraction of the water required could be used and means were wanting to effect a solution of the organic sulphur combinations in water.

It is now found that the malodorous components of the waste gases can be successfully removed with small quantities of water when these gases are actively treated with water in the finest condition of subdivision. In the combined working of this mechanical treatment with the condensation of the water vapors present, there occurs, with the separation of sulphur, a chemical decomposition of the sulphur combinations, whereby it is possible to remove the offensive odor from the gases, without obtaining malodorous waste water. Experiments even on a large scale have determined that odorless waste water is obtained which can be directly discharged even into small watercourses.

In carrying out the process, according to German patent No. 285,976, class 55b (dating from May 28, 1914) issued to Willie Schacht, of Weissenfels on the Saale, the smoke gases of the salt furnaces, the gases escaping from the cookers, the continuous gases from evaporating apparatus, etc., are conducted, cooled or uncooled, into revolving condensing apparatus, into which water is simultaneously admitted, in counter or direct-stream. Suitable apparatus for this, in connection with pumps, centrifugals, disintegrators, stamp-mills, etc., are known in other industries than the cellulose industry. They have, however, hitherto only been used to effect the removal from gases or impure air of solid particles such as dust, flying dust, soot, etc. They have also been suggested for condensation, absorption or other reciprocal actions, but not as yet for the removal of odors from the waste gases of sulphate cellulose plans. In its employment for this purpose a theoretical knowledge of the chemical decomposition processes that occurred has been wanting.

In special cases it is advisable to add chemicals to the washing water, for instance acids, acid salts or alkalies, combinations with an alkaline reaction, etc. As a rule however, the use of pure water suffices.

The patent claim is as follows: Process for the removal of odors from the waste vapors and waste gases of the sulphite cellulose manufacturing process, by washing the gases with water. Herein distinguished that the waste gases, cooled or uncooled, are brought in contact with water in revolving condensers (pumps, centrifugals, disintegrators or stamp-mills, or the like) in counter-stream or direct-stream.

A Famine in Paper Pulp

REPORTS from a neutral country, say *Wochenblatt für Papierfabrikation* (No. 23, 1915, p. 1048) indicate a threatened shortage of cellulose which is already an equal source of anxiety to paper manufacturers and paper consumers. Representatives of English concerns have already visited Scandinavia and America for the purpose of insuring a supply of pulpwood, but their efforts were unsuccessful. Swedish houses would not assume the war risk because the German revision of contraband declarations did not extend to pulpwood. From Finland, too, no pulpwood can be obtained, the shipment being at present impossible.

As to America, on the one hand, with large demand the available supply is limited; on the other hand, freights have increased enormously and the insurance rates are prohibitively high. The supply of cellulose wood in England is decreasing rapidly. France, according to the *Wochenblatt,* in order to relieve the needs of the papermakers, has had recourse to an emergency remedy, the Chamber having under consideration a law to abolish the import duty on cellulose during the war. Italy, however, is the greatest sufferer, having hitherto obtained her entire supply from Austria, notably from Galicia, Transylvania, Hungary and Lower Austria, from which parts not as much as a cubic yard of wood can now be expected. As, moreover, Italy has drawn almost her entire supply of cellulose from Germany and Austria, and the substitution of shipments from Scandinavia would be attended with great difficulty, in that country a great scarcity of paper pulp is likely to occur shortly.

Applications of Cellulose in the Arts

Nitrocellulose Solutions Used as Metal Lacquers and Leather Finish—Solvents Employed

By ALBERT D. CONLEY

Formerly Chemist, Anderson Chemical Company

DRY nitrocellulose is practically useless in the peaceful arts, but its solutions find many uses. Its use for celluloidlike bodies is well known and is of interest to pulp and paper manufacturers, because tissue paper is the starting point. Another use of nitrocellulose is in the manufacture of solutions for metal lacquering and leather finishing. In the preparation of a fluid for use in these industries, the choice of solvent is of great importance.

NITROCELLULOSE SOLUTIONS AS METAL LACQUERS

A properly made nitrocellulose solution when flowed upon a metal surface will evaporate leaving behind a film which will protect the metal from oxidation. Such a film will not stand a great deal of rough handling nor repeated washing with water, but appears to be very satisfactory for a great many objects, particularly those composed of brass. The great advantage of these solutions lies in the fact that they may be dried at room temperature or in moderately heated ovens. No baking is necessary as is the case with Japans.

The lacquer film is controlled by the choice of solvents but is affected by the temperature and manner of drying. In the case of silver and brass lacquers the film must be transparent, as well as with lacquers for paper clock dials, for statuary, drawings, and so on. A white film would be satisfactory in a mantle dip as the solution into which some Welsbach mantels are dipped is called. This coating is to render the mantle less likely to break during shipment and burns off when the mantle is lighted for the first time. Colored films are desired sometimes in order to make tin look like brass, or to make brass look richer in copper than it really is. A similar film could be used to color electric light bulbs.

There are many possible nitrocellulose solvents, but comparatively few of commercial importance. These are all commercial organic substances, the most important of which are amyl and ethyl acetates, ethyl methyl ketone and the light acetone oils, wood alcohol, and acetone. Commercial wood alcohol is a solvent because of the acetone contained in it. Pure methyl alcohol is not a solvent. Both wood alcohol and acetone give white films so that their use in metal lacquers is very limited.

Amyl acetate is by far the most important solvent. It is made from crude fusel oil, a mixture of isomeric amyl and butyl alcohols principally.[2] Commercial amyl acetate has a specific gravity of about 0.865 to 0.875 at 15° Cent. and distills between 100° and 140° Cent. About equal amounts will usually distill above and below 130° but the temperature of distillation will vary considerably with different samples. It saponifies 80 to 100 percent as amyl acetate. Although the best all-round solvent, its high cost invites the use of other materials.

The light acetone oils are higher distillates in the manufacture of acetone. Ethyl methyl ketone, the only one which can be purchased as a uniform product, has a gravity of 0.812 to 0.814 at 15° Cent. and distills usually between 75° and 100° with the bulk of the distillate at about 80°. Many of the acetone oils have a yellow color and disagreeable odor. The high boiling acetone oils are not solvents.

Most nitrocellulose lacquers have for the vehicle a mixture of solvents and nonsolvents. Nonsolvents are cheaper on the whole than solvents, and very much cheaper than amyl acetate, so it is quite natural that competition has driven the manufacturers to add the limit of nonsolvents to their products. Yet nonsolvents do impart certain desirable qualities to the nitrocellulose film and their presence is not evidence of adulteration.

The nonsolvents most in use are fusel oil, denatured alcohol, benzol, and petroleum benzine. Fusel oil and denatured alcohol are regarded as nonsolvents although they do exhibit solvent tendencies. The writer has found that 95 percent ethyl alcohol will dissolve 1 or 2 percent of nitrocellulose. Schwartz has discussed this solvent tendency.[3] It is said that nitrocellulose washed with ethyl alcohol increases in stability as does guncotton when washed with acetone, diluted with 10 percent of water. In this latter case the solvent effect of the acetone is destroyed except for 3 or 4 percent of a low nitrated product.[4] So it is by no means certain that the material dissolved by the ethyl alcohol is nitrocellulose and not some by-product of the reaction. Fusel oil dissolves a small amount of nitrocellulose but the solvent effect appears to be of a different character from that of alcohol. It is quite possible to effect a solution of nitrocellulose in a solvent mixture containing as little as 40 or even 35 percent of amyl acetate and the remainder of alcohol, benzol, or fusel oil. With benzine this might be possible but never satisfactory. But the object of the solution is to produce a film and the amount and proportions of these nonsolvents is limited by their effect on the film quite as much as by their effect on the solvent qualities of the vehicle.

Refined fusel oil is the crude product distilled to remove dirt, water, and low boiling alcohols. At 15° Cent. the specific gravity will vary from 0.813 to 0.817. It will distill at 100° and 135° Cent., about 85 percent often distilling between 120° and 130° Cent. Fusel oil has an oily appearance which accounts for its name and by reason of this oily nature and its slowness of evaporation it aids in securing a smooth film free from

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[1] Part of a thesis on the "Proximate Analysis of Nitrocellulose Solutions" for the degree of Chemical Engineer, University of Maine, 1914.

[2] Analysis of some samples of fusel oil are given by Boswell and Gooderham in the *Journal of Industrial and Engineering Chemistry, 4,* 667 (1912).

[3] Solubility of the Nitrocelluloses in Ethyl Alcohol. *Kunstoffe 3,* 341-3, Caoutchouc and Guttapercha *124,* 3859-60 (1914).

[4] Re-Investigation of the Cellulose Nitrates. A. Luck and C. F. Cross. *Journal of the Society of Chemical Industry,* 1900. "Researches on Cellulose," 1895-1900. Cross and Bevan; page 45.

the effects caused by too rapid drying. This is especially valuable in a brush lacquer where time and smoothness of flow must be enough to obliterate the brush marks. A small amount of fusel oil will enable petroleum benzine to mix in all proportions with denatured alcohol. It also helps to prevent the film from whitening in those cases where much petroleum benzine has been added. Fusel oil is an excellent solvent for resins so that when resins are desired in a lacquer it is easy to add them in the form of a fusel oil solution. Fusel oil increases the viscosity of solutions in which it is used.

Benzol is much used in lacquers and the writer has frequently made good solutions containing 60 percent of that nonsolvent with 40 percent of amyl acetate. Petroleum benzine is cheap which is about its only virtue. Neither benzol nor benzine has any appreciable effect on the viscosity of the solution in which it is used.

SOLUBLE NITROCELLULOSE

The nitrocellulose used in these solutions passes under several names, soluble cotton, collodion cotton, pyroxylin, and others. It differs from guncotton in being completely soluble in a mixture of ether and alcohol. Such a nitrocellulose probably contains 11 to 12 percent nitrogen as compared with the 13.5 percent found in the highest stable nitrate. In general the soluble nitrocelluloses are a mixture of lower cellulose nitrates and probably contain some nitro-oxycelluloses and nitro-hydroxycelluloses as well. The nitration of cellulose for guncotton and for celluloid is probably all done by machinery. Some of the machines for this purpose are described by Worden in his book, "Nitrocellulose Industry,"[5] but a considerable amount of cellulose is still nitrated by hand for use in metal lacquers and in leather finishing. A solution for lacquering must be clear, smooth, and free from any foreign or unnitrated material. Hence in hand nitration the cotton used must be absorbent in order that the acid will penetrate and give an even nitration and must be perfectly clean. Just enough acid is taken and the cotton is stirred in by hand. The conditions of nitration must be so regulated that nitration is absolutely complete but that no higher nitrates are found, as either under or over nitration would result in decreased solubility in the desired solvent mixtures. With many solvent mixtures it is necessary to adjust the conditions of nitration in order to obtain a product which will give a satisfactory solution.

The solubility of nitrocellulose is a function both of the nitrocellulose itself and of the solvent. That is, a given solvent mixture may dissolve some samples of nitrocellulose but not all, and a given sample of nitrocellulose though soluble in one solvent mixture is not necessarily soluble in all. Also two samples of nitrocellulose dissolved to the same concentration in the same solvent or solvent mixture may give solutions of different viscosities.

One of the most interesting characteristics of nitrocellulose solutions is the wide range of viscosity possible with solutions of the same concentration. In the absence of a suitable viscosimeter this range cannot be put into mathematical terms but it may vary in a solution containing about seven ounces of nitrocellulose to a gallon of amyl acetate, from that of a rich milk to jelly or cold molasses. This viscosity can usually be controlled by the temperature of the nitrating bath and the composition of the acid mixture, but in the case of abnormally low viscosities it seems to be due to the composition of the raw cotton.

Not only does the viscosity of solutions vary with different samples in the same solvent, but it varies with different solvents and the same sample of nitrocellulose. Acetone, ethyl methyl ketone, wood alcohol, and ethyl acetate all give lower viscosities than amyl acetate. Low boiling samples of amyl acetate give less viscous solutions than high boiling ones. The cause of the various viscosities is not known, but the various theories are discussed by F. Baker in the *Journal of the Chemical Society.*[6]

CLASSIFICATION OF METAL LACQUERS

Enormous quantities of brass are lacquered, often in cramped quarters, and the mechanical handling of the work is an important problem. Large surfaces and cylindrical objects which need to be lacquered on one side only are sprayed. Small flat objects are laid on trays and sprayed. Other objects are dipped either singly or by the basketful. Delicate work and work on a small scale is brushed. Drying is usually hastened by the use of moderately heated drying rooms. One mill which lacquers large quantities of small brass plates, lays them on a moving belt which is so timed that they drop off onto the packing bench all ready for shipment. Heavy objects are suspended from hooks which run along an overhead track so that they are easily pushed into the drying room. Brass tubing is mounted on spindles which turn it around and avoid the necessity of handling. In all cases the composition of the lacquer must be regulated to meet the conditions of application and drying. Hence there are brush, dip and spray lacquers, although no sharp line can be drawn between each class. Brush lacquers may be expected to be more concentrated than dip or spray ones. All lacquers may contain more or less gum or resin but it is more likely to be found in brush lacquers than in others. Some lacquers may consist entirely of a solution of resins in nitrocellulose solvents; since these contain no oil they cannot be considered as varnishes. Lacquers are also classified according to the surface they are intended to produce, as glossy, mat, or satin, and to the material for which they are intended as brass lacquers, silver lacquers, etc. The chief requirement of a silver lacquer is that it be perfectly colorless. Silverware intended for exhibition is frequently lacquered.

THE COMPOSITION OF NITROCELLULOSE LACQUER

is seen from the foregoing to be a mixture of solvents and nonsolvents in which is dissolved a certain amount of nitrocellulose and possibly some gum or resin. The solution must be of low enough viscosity to flow readily and yet must be of sufficient concentration to leave behind a durable film. If the film be too thin it is likely to be iridescent. Hence the demand is for nitrocellulose which will produce a thin solution. Gums and resins have the advantage that they increase the concentration without increasing the viscosity. Certain resins will harden the film. Bleached shellac, some of the copals, gum benzoin and ester gum are frequently found. Rosin, probably because of its acid nature, is not used in lacquers but ester gum which is much used closely resembles it in appearance. Ester gum is a synthetic product, and is said to be a glycerin ester. Some solutions are made from scrap celluloid and hence contain camphor. A great deal of celluloid, however, produces solutions having too high a viscosity.

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[5] D. Van Nostrand & Co., 1911.

[6] Vol. 103, 1653-75.

Lacquer solutions are often made more concentrated than they are intended to be used and are accompanied by "thinners" so that the user may dilute them to suit himself. The thinner is usually the same as the solvent mixture. Nitrocellulose solutions when used as lacquers contain about four to eight ounces of nitrocellulose per gallon and may also contain no resin or any amount up to about eight ounces. If a nitrocellulose solution is intended to be diluted it may contain as much as two pounds to the gallon but this is more of a jelly than a solution. One pound to the gallon in amyl acetate appears to be favorite with those firms who prefer to manufacture their own lacquers.

NITROCELLULOSE SOLUTIONS IN LEATHER FINISHING

According to C. A. Higgins[7] nitrocellulose solutions are desirable for leather finishing. He says "The advantages of the process over the old method of japanning with linseed oil are that no ovens are required, sunning is unnecessary, and the leather retains its natural grain surface owing to a thinner coating being used in the collodion process. The enamel is stronger and has not the brittleness or the liability to crack of oil enameled leather." He also says that nitrocellulose solutions are finding a use as a vehicle for the application of pigments and decorative material on account of the ease of application and the strength and insoluble nature of the film produced.

From what the writer has been able to learn, patent leather is prepared by the Collodion process about as follows: First Coat, To one volume of a heavy boiled linseed oil known as "long daub," which may have been thinned with amyl acetate, are added two volumes of a solution containing eight or nine ounces of nitrocellulose, in each gallon, and enough amyl acetate to reduce the solution to the required density. The second coat is similar to the first, and the third is the varnish coat which is the distinguishing characteristic of patent leathers. Much experimental work appears to be going on with regard to the finishing of split leather and with fair success. Large quantities of nitrocellulose solutions are also used in the manufacture of artificial leather. In many cases nitrocellulose dissolving to form a much heavier solution than is the case with metal lacquers is used, but in the writer's experience it seemed to be the tendency of the leather people to change to lighter viscosities. Fusel oil is used in considerable amounts. Ethyl acetate and wood alcohol are also used and the nonsolvents are very much the same as with the metal lacquers. Ability to mix with boiled linseed oil seems to be an essential characteristic of solutions for leather finishing.

Apparatus for Making Sulphite Acid

An interesting apparatus for burning sulphur and providing sulphite solutions is described and illustrated in the specifications of a patent issued on July 20, 1915, to Frank E. Coombs, of Au Sable Forks, N. Y. The specification reads:

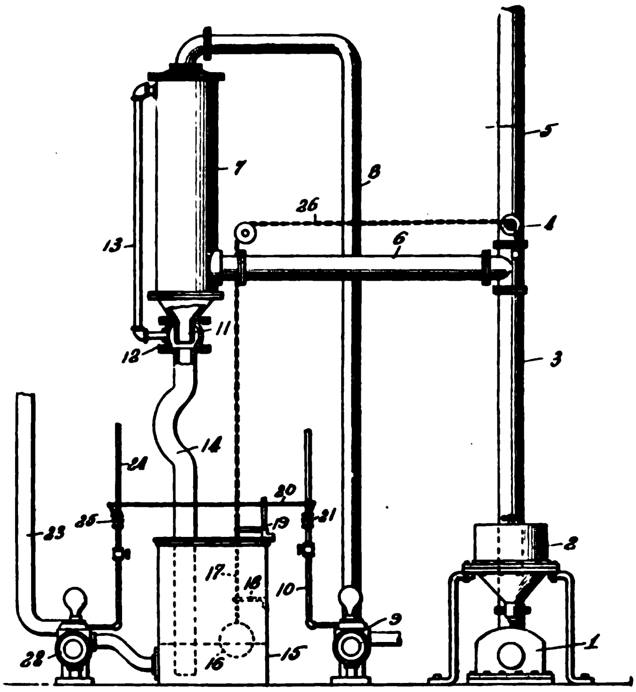
The invention comprises a simple, cheap and ready means for producing relatively concentrated solutions of sulphurous acid, or of acid sulphites such as the acid sulphite of lime, mixed acid sulphites of lime and magnesia, acid sulphite of soda, etc., and for applying SO_2 in the defecation of cane and beet juice in the manufacture of sugar.

The regulable combustion of sulphur offers some difficulty in practise, owing to the properties of that element, which forms several allotropic modifications having different physical properties. Rhombic, or ordinary sulphur, melts at about 114° Cent., to form a thin liquid which flows readily and can be discharged from jet nozzles. As the heat increases, however, the liquid sulphur changes into another and allotropic viscid form in increasing proportions with the rise of temperature until at about 200° it becomes black and so thick and gummy as to be quite difficult to handle. In using a feed of liquid sulphur it is therefore necessary to work between rather narrow temperature limits, usually between 115° and 130° Cent. At still higher temperatures it vaporizes freely, boiling finally at about 444° Cent. There is, of course, no difficulty in handling the vapor.

In the present invention, it is desirable to control the flow or feed of sulphur to the combustion device and to control the combustion within rather narrow limits, and the foregoing principles are therefore utilized.

In the present invention, the sulphur to be burnt is supplied to a suitable combustion device to produce sulphur dioxide and a current of this sulphur dioxide is led into a countercurrent device where it meets a downflowing flow of water, or other liquid, or of water carrying a suitable base. This flow is utilized to form and regulate the draft producing the dioxide current.

Fig 1



In the accompanying illustration I have shown, rather diagrammatically, certain means within the present invention.

In this showing, Figure 1 is a perspective view with certain elements in section, showing a complete apparatus for making sulphurous acid or acid sulphite solution, or for sulphitation of sugar juices; Fig. 2 is a section showing a sulphur feeding device; Fig. 3 is a section of a combustion chamber for sulphur; Fig. 4 is another view of the same on line *x*—*x* of Fig 3 showing the feeding device assembled with the burner; Fig. 5 is a sectional view of another form of combustion

Continued on page 30

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[7] Uses of Collodion in Leather Finishing. C. A. Higgins. Leather Trades' Year Book (1914), 148-151; *J. Soc. Chem. Ind.*, 33, 704.

PAPER

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Commercial Defense

In recent months public officials and private citizens have alike discussed the necessity for strengthening the naval and military defenses of this country. The great European war, which in its magnitude and destructiveness far exceeds anything which history records, has brought the American people to realize that in our present condition we would be utterly defenseless against an attempted invasion made by a foreign country as well prepared as any one of the great nations involved in the pending struggle.

There seems to be no difference of opinion among the great majority of our people that we must put ourselves in shape to meet any such possible invasion. We differ only in our views concerning the manner in which we should prepare and the extent to which it should be carried. The question of expense necessary for the maintenance of an army and navy equal to any probable demands no longer deters us from action. And even the advocates of universal disarmament who insist that our international controversies be adjusted by arbitration or other peaceful means, realize that it is folly for any one country to disarm while others are making preparation on stupendous scale to assert their policies by sheer force. It often happens that the man who is unwilling to carry a gun for offensive purposes is compelled to do so to protect himself against others; and this is the situation which confronts the United States.

We heartily favor, as most of our people seem now to do, the economical expenditure of a considerable appropriation for the purpose of putting this country in a state of preparation that will not only enable it to defend itself against invasion, but, what is even more desirable, will deter other nations from undertaking such invasion.

However, as we have had occasion to state before, it does not suffice for us to make military and naval preparation and stop with that, if we mean to maintain our position among the dominant countries of the world. It is just as necessary for us to prepare for the commercial struggle which will certainly follow the war as it is to safeguard our shores against foreign invasion.

The condition which will arise when the end of the European struggle is at hand is pertinently and forcefully stated in a recent editorial in the *Evening Mail*, as follows:

> Peace between the armies of Europe may come at any time (the sooner the better!), but its coming will mark the beginning of the fiercest war for trade ever indulged in by the nations of the world. There is to be no peace in that struggle for a great many years to come. Nor will it be confined to Europe. The United States is to be in it—perhaps the center of it. Here is the richest market of the world for the manufacturers and merchants of other nations. It may well be assumed as a certainty that they are eagerly awaiting the day when they can bombard our shores with their products. That is more in their minds than any possibility or desire to bombard us with guns. Our Government at Washington, therefore, will face the task not only of defending our manufacturers from this intense foreign competition bound to come at home, but also to clear the way for us, as much as Governments can do so, in the markets of the world. We, too, have goods to sell to other nations besides our own; we, too, must realize that our enduring prosperity no longer rests upon our home markets. We have outgrown them and must hereafter regard the world as our trading post.

As suggested in this article, there is no limit to the scope of the industrial conflict which will be waged when the men of Europe lay down their guns and return to the factories. It will be a struggle for commercial supremacy in every quarter of the globe. Wherever we undertake to dispose of the products of our American mills we must understand that it involves a contest with European producers, while the principal struggle will be to prevent the capture of our own home trade by foreign countries. In the years that have passed this commercial invasion has been persistent and forceful; but the efforts heretofore made to supply the American market are not to be compared with what we may expect in the future.

How the European struggle will end we can only venture a guess, but of this we may be perfectly sure—most of the European countries, if not all of them, will maintain their identity and will exercise their industrial activity. For a little while perhaps the full force of their commercial strength will not be felt. It will require some time to repair the commercial machinery which has been in a great measure wrecked by the ravages of war. Until that is done their producing capacity will be restricted. But when this rehabilitation is once effected and the factories begin once again to operate regularly, a market must be found for their produce, and naturally the first country to which they will look for the absorption of their wares will be the United States. They will need our money and need it at once; and with the impairment of their credit which will surely follow the war, the only means by which they can procure American money will be to receive it in exchange for what they produce and supply us. So urgent indeed will be their requirements that they will not parley as to the measure of compensation, but will probably accept almost any price they may be offered.

The same is true of every consuming country which will have the means to pay for its supplies, so that wherever the American manufacturer undertakes to dispose of his wares, he will be met with the sharpest competition from the European producer.

That something must be done to prevent our own domestic market from being dominated by the foreign manufacturer and the complete depression of our own industrial life is generally conceded. There has been a great deal of loose and disjointed talk from semi-official sources as to what steps it is proposed to take. Now and then public utterance is made which carries with it the hint that it has the endorsement of the powers that be, which inference is usually repudiated with promptness. That the Administration is more or less anxious about the situation, and that it is seriously considering what it may do to meet this great commercial crisis, cannot be questioned. But no definite policy has been announced, nor, indeed, does any definite conclusion appear to have been reached.

The importance of the question lifts it far above the narrow confines of political expediency. It is a problem which vitally concerns our industrial life and the welfare of all our people, and should therefore engage in its solution the best and sincerest thought of all true Americans.

The economic questions which we shall be called upon to settle cannot be disposed of in accordance with the old political formulas which the two great parties have for generations applied to such cases. Conditions are unprecedented, and the man or the party that undertakes to outline future policies on the basis of past performances will surely blunder. It is a new game that we are now playing and we must familiarize ourselves with new rules.

The sentiment suggested in a recent public utterance of the President, "America First," is all right, if we all join sincerely in our efforts and try to put it into effect; but it will amount to little if we simply march under a banner bearing that lofty inscription, and do nothing but march. There is little hope of America being first unless we pursue such policies as will put her at the head of the line. Crying, "America First," will be as fruitless as praying for our daily bread without working for it.

What we need to do, and to begin doing now, is to soberly and seriously counsel together concerning the best commercial preparation that can be made; and all of us, from the President down, join in putting our plans into effect without the slightest regard to political affiliations or political advantage.

Let us be sincere in the adoption of the slogan "America First," and not strive, at variance with that principle, to put the Democratic party first or the Republican party first, or anything first.

Whether, to meet the industrial warfare that is sure to come, it may be best to revise the tariff, amend the antitrust law, or to do something else, let us honestly and diligently devote ourselves to determining what remedy is best for all and join in a sincere effort to apply it. It is a matter which concerns the business man more vitally than the politician. We should therefore make it a part of our business to have a voice in its determination.

Notes on the Sizing of Paper

IN studying the possible interactions between the cellulose fiber and aluminum sulphate or free sulphuric acid, known weights of several different halfstuffs were steeped in dilute sulphuric acid for four hours, adopting conditions of concentration and quantities comparable with those existing in the process of engine-sizing. The free and total sulphuric acid were then determined in the liquid drained from the pulp. The results are summarized in an abstract of a paper in the *Chemiker Zeitung* which appears in the *Journal of the Society of Chemical Industry* for October 15, 1915.

In all cases there was a slight increase in total sulphuric acid, showing that nothing is absorbed by the fiber, but rather that sulphates are extracted from it. In the experiment with straw cellulose, the sulphuric acid was completely neutralized; in the case of cotton almost the whole of the acid added remained free.

The influence of the fiber on the acid component of the sizing mixture would therefore appear to be confined entirely to its ash constituents, particularly the calcium salts. The reaction between aluminum sulphate and calcium carbonate was studied in the absence of fiber. The double decomposition proceeds to a considerable extent, so that more than $2SO_4$ of the molecule $Al_2(SO_4)_3$ enters into combination with the calcium. Dialysis experiments through parchment paper were performed with calcium carbonate on one side of the membrane and aluminum sulphate on the other. At the end of the experiment, no soluble aluminum salt was found in the calcium carbonate compartment, all that had penetrated being precipitated.

A study of the reactions between aluminum sulphate and cellulose fibers showed that considerable proportions of alumina are absorbed by the fiber, but little or no sulphuric acid; the alumina so deposited has no sizing action but it regarded merely as a loading material.

Practical tests in the paper mill have shown that a large portion of the aluminum sulphate may be replaced by sulphuric acid in the engine-sizing of fine papers.

THE WEEK'S LATEST TRADE NEWS

Forest Products Will be Discussed

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 2—President Frank L. Moore of the Empire State Forest Products Association has arranged a tentative programme for the tenth annual meeting and banquet of that organization to be held at the Hotel Ten Eyck in Albany on Thursday, December 2. The first session will be held at ten o'clock in the morning, when Major J. W. Stevens of Albany will deliver an address of welcome. This will be followed by a response by President Moore, who will also deliver his annual address. George N. Ostrander, of Glens Falls, chairman of the legislative committee will next give the report of that committee: Chairman W. L. Sykes, of Utica, will render the report of the forestry committee; Chairman John N. McDonald, of Brandreth, the report of the committee on transportation; Chairman G. H. P. Gould, of Lyons Falls, the report of the committee on finance.

There will be a report of the committee on resolutions and a committee of nominations will be appointed. State Superintendent of Forests C. R. Pettis and George N. Ostrander will lead a discussion on cooperation between private woodland owners and the conservation discussion for the more efficient protection of the forests against fire, and Frank A. Cutting and Charles E. Sisson will lead a discussion on top-lopping as a protection against fire.

The afternoon session will open at two o'clock with an address by Dean Hugh P. Baker of the State College of Forestry, Syracuse University, on "The Disadvantage of Logging to a Fixed Diameter Limit in the Adirondack Forests."

C. S. Sims, vice president of the D. & H., will deliver an address on "The Transportation of Forest Products," James S. Whipple will speak on Forestry Associations in New York State and Arthur Goodby will talk on Forest Taxation.

There will be a discussion of the new constitution and the duty of the lumbermen thereunder led by Ferris J. Meigs and James S. Whipple.

President John G. Egar of the Association for the Protection of the Adirondacks; Dr. John H. Finley, president of the University of the State of New York; William Barnes, jr.; Louis Marshall and George D. Pratt of the conservation commission will speak at the annual banquet, which will be held in the evening. BLACK RIVER.

Battle Island Mill to be Sold

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 2—On Thursday of this week at the Court House in Oswego will be sold at public auction the sulphite plant of the Battle Island Paper Company, pursuant to an order recently made by Judge George W. Ray of the United States district court. The company went into bankruptcy more than a year ago and the mill has not been operated since that time.

Charles N. Bulger, David F. Costello and Nelson P. Bonney are the trustees in bankruptcy and on the morning of November 16 they will render their report to Judge Ray at the Court House in Auburn at which time all persons having an interest in the property will be required to be present and show cause, why the sale of the sulphite plant should not be confirmed.

The order made by Judge Ray permitting the sale allows that only 10 percent of the purchase price be paid at the time of the sale and the balance when the deed is delivered.

BLACK RIVER.

The Technical Section of the Canadian Pulp and Paper Association intends to hold a meeting in Montreal on Friday, November 19. A council meeting was held last month at which thirty-one applications for membership were acted upon favorably.

Old Age Pensions for Mill Workers

[SPECIAL TO PAPER]

APPLETON, Wis., Nov. 2—An announcement of great interest was made last week by the Kimberly-Clark Company, and the Neenah Paper Company, which are closely related in ownership, to the effect that arrangements had been concluded for the establishment of a pension system for employees. The announcement was made in the following form:

"The directors of the Kimberly-Clark Company and the Neenah Paper Company have for some time felt that some systematic means should be devised for recognizing long and faithful service with these two companies. There are today in our mills many men and a few women who have been with us from twenty to thirty years and still a few who go even beyond that in their years of service. Much time and thought therefore have been given to the preparation of the pension system which we now take pleasure in announcing.

"It is not presumed that a pension shall be large enough to cover all the needs of living expenses of a man retiring from active work, but it is contemplated that the pension shall be of sufficient size to offer substantial help in old age and piece out a lessened earning capacity, or supplement the income from the earnings of a lifetime. To many a man the certainty of an income of from twenty to thirty dollars a month, in addition to such other income as he may possess or be able to produce, should give a peace of mind which he has not enjoyed in contemplating the evening of life when he is no longer able to earn as much as he did during his younger and more vigorous years. With all these points in mind this pension system has been devised.

"Three of the most important and interesting clauses of this new plan are as follows:

"Any male employee from 65 to 69 years of age inclusive who has been twenty-five or more years in the service and has become incapacitated for work of like character to his past trade or employment, may make application or be recommended for retirement; and the pension committee shall decide whether or not he shall be granted a pension or given employment of a different character, or parts of both.

"Any female employee from 55 to 59 years of age inclusive who has become incapacitated for work of a like character to her past trade or employment, may make application or be recommended for retirement, and the pension committee shall decide whether or not she shall be granted a pension or be given employment of a different character, or parts of both.

"For each year of active service an allowance of one percent of the average annual pay during the ten years next preceding retirement; but no pension shall exceed $50 a month or be less than $20 a month for men or $15 a month for women."

Riotous Strikers Indicted by Grand Jury

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 2—After the longest session in the history of Jefferson county, the grand jury reported to Justice Leonard C. Crouch of Supreme Court last Wednesday morning, handing up in the neighborhood of fifty indictments, sixteen of which were against strikers of the Deferiet mill of the St. Regis Paper Company, charged either with rioting or with having incited a riot on the night of September 2, when the second strike was called. These men will have their trial at the December term of county court, each having pleaded not guilty to the charge against him. Of the 308 witnesses examined sixty-one were in reference to the strikers.

Although there has been a little trouble now and then among the strikers and non-union men at some of the Carthage mills the situation is now normal. BLACK RIVER.

BRAINS vs PREJUDICE

OF COURSE, THERE IS NO ARGUMENT ABOUT YOUR HAVING BRAINS, and you will admit you have prejudices. But sometimes prejudices stultify the brain action and mistakes result. We have heard people say that under no circumstances would they use talc.

From our point of view, talking about brains, "There's Nobody Home," and prejudice was working overtime when our representative called.

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is NOT TALC. Its chemical analysis is as different as sand is from clay.

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and better than clay, because it has ingredients in it which give it more than 100% greater retention than clay, is pure white, free of grit and mica, and contains no moisture. Why pay freight on Water?

We know that the brain is working now, and that you are saying to yourself: "I believe I'll ask them if they have this, and get a sample." Do it! It will probably cut your clay bills 50%.

The St. Lawrence Talc Co., Inc.

Natural Bridge, N. Y.

In Honor of Mr. and Mrs. J. C. Kimberly

[SPECIAL TO PAPER]

APPLETON, Wis., Nov. 2—On Thursday evening of last week at the Equitable Fraternal Building in Neenah, Mr. and Mrs. J. C. Kimberly gave a reception and dancing party in honor of their parents, Mr. and Mrs. J. A. Kimberly, particularly in recognition of the fiftieth anniversary of the marriage of their parents, which occurred yesterday, and was celebrated by a big family dinner party and reunion. About 250 guests were present at the party last Thursday, not only Neenah and Menasha being represented, but also all the rest of the Fox river valley cities and towns, as well as places further removed. The event was a most successful and delightful one in all respects, and the guests from abroad were pleased to find Mr. and Mrs. Kimberly in vigorous health.

The universal interest manifested in the affair is not to be wondered at when it is recalled that Mr. Kimberly is practically the only surviving representative of the pioneer band of men who established the first beginnings of the paper manufacturing industry in the Fox river valley, and Wisconsin generally, nearly forty-five years ago, the industry which in the succeeding years has grown to be the principal and representative one of this valley and the Wisconsin river valley, and has become a very important one in other parts of the State as well. Obviously, this district and the State at large owe much to the efforts of Mr. Kimberly.

Neenah Paper Company Wins Safety Shield

[SPECIAL TO PAPER]

APPLETON, Wis., Nov. 2—On Sunday, Nov. 7, a meeting of the Central Safety Committee of the Kimberly-Clark and Neenah Paper companies, will be held at the Appleton Opera House at 3 P.M., at which there will be formal presentation of the safety shield, won by the Neenah Paper Company, to a representative of that company. Following this there will be an address by A. H. Young, supervisor of safety at the South works of the Illinois Steel Company, Chicago. As a fitting conclusion to the presentation ceremonies two reels of motion pictures, the latest things from the national safety council, will be presented. Street car tickets and tickets to the opera house will be distributed to the families of the employees of the two companies.

In relation to the safety shield contest a letter was received by the Neenah Paper Company, from the chairman of the Wisconsin Industrial Commission, in which he said among other things:

"I have your report showing that during eleven out of twelve months no time was lost on account of accidents, and in the twelfth month only two accidents occurred, which caused a loss of time not exceeding six days. I believe this is the most remarkable record that has come to the attention of the commission from any individual plant in this State, and your company and your employees in particular are to be congratulated upon this wonderful showing. We trust this record will come to the attention of other companies in Wisconsin. It will no doubt have a most wholesome effect throughout the State."

Great Things Prophesied for New Machine

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 2—A paper machine which Michael Ross, of Fulton, has invented is now being tried out at the plant of the Volney Paper Company of that place. Application has been made for a patent.

It is claimed for the new machine that it is a great time saver and a decided improvement over the machines now in use. That it will aid greatly in revolutionizing the papermaking industry, the inventor believes will be the case.

If it proves as successful as is expected, a company will be organized for the manufacture of the machinery in Fulton. It is stated that the Chamber of Commerce stands ready to assist in every way possible and that there are several available manufacturing sites. Mr. Ross is the head of the concern known as M. Ross & Son. BLACK RIVER.

Safety Conferences in Wisconsin

[SPECIAL TO PAPER]

GREEN BAY, Wis., Nov. 2—Pioneer work done by the paper manufacturers in the "safety first" movement here has been shown to be effective. "Safety round tables," in which paper mill officials and employees were practically alone in conducting last year, will be resumed on Wednesday night at the Kellogg Public Library with representatives of the city, traction company and lighting company, as well as factory and machine shop workers, taking part.

The Wisconsin Industrial Commission will send its architect, S. J. Williams, to the city to speak at the conference on the subject "Fire Prevention in Factories." Later, other speakers will tell the officials and workers some interesting facts about lighting in shops, shop sanitation and safety in factories and upon the streets.

A. E. Cofrin, superintendent of the Northern Paper Mills of this city, will again act as chairman of the "safety round tables." He has been assured the cooperation of General Manager C. R. Phenecie, of the Wisconsin Public Service Company, which operates the street railway line and the gas and electric lighting plants. Employees will be sent to the conference by the public utility. With all classes of workers taking an interest and an active part in the "safety round tables" this year it is certain they can be made much greater than ever.

Industrial and Other Notes from Appleton

[SPECIAL TO PAPER]

APPLETON, Wis., Nov. 2—The Consolidated Water Power & Paper Company, of Grand Rapids, has applied to the Wisconsin Railroad Rate Commission for permission to increase the height of its dam across the Wisconsin river to twenty feet, and the commission has named Friday, November 26, as the date of holding a hearing in Grand Rapids to listen to evidence pro and con.

P. R. Thom and Judson G. Rosebush, are members of a citizens' committee, the former being chairman, appointed to take charge of a movement to raise $15,000 to pay off the debt and make improvements upon the armory of the Appleton militia company. It is believed that the present sentiment for national "preparedness" will make this an easier task than it would have been a year or more ago.

An important decision by the Wisconsin Supreme Court is that typhoid fever contracted by an employee through drinking water furnished by an employer, is an accident, within the meaning of the Wisconsin Employers' Liability law.

C. W. Howard, of Neenah, has been re-elected president of the Winnebago County Humane Society.

L. M. Alexander, of Port Edwards, was in Appleton last week attending a meeting of the board of trustees of Lawrence College, of which he is a member.

New Rex Mill Nears Completion

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 2.—George E. Higgins, of this city, has just been awarded the contract for the installation of the new fire sprinkling system for the Rex Paper Company. The system will cost in the neighborhood of $10,000, states Mr. Higgins, and when installed, will be one of the most complete in the city. Mr. Higgins has placed the sprinkler systems in nearly all of the Kalamazoo mills.

Saturday saw the completion of the big concrete stack at the mill. The stack has been under construction for less than three weeks. The concrete floors are now being placed in the mill. The big boilers are due to arrive here during the early part of the present week, and Engineer Dan J. Albertson says they will be installed as soon as possible. The King-Neary washers, which will be used in the mill, have reached here from Appleton, Wis., and it is expected that other machinery will be coming regularly from now on.

Machine tenders and beatermen out of a position can get in touch with employers by using the Classified Ad page of PAPER.

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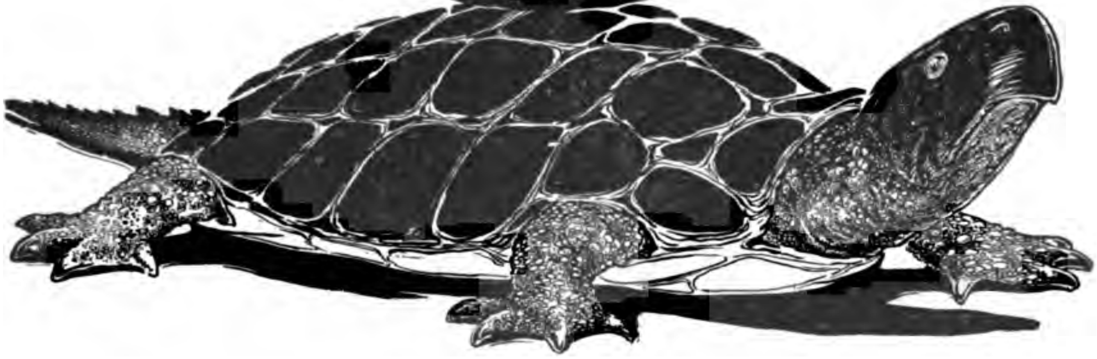

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AGENTS IN ALL THE PRINCIPLE CITIES OF THE WORLD

Trouble Feared on Michigan Central

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 2—During the past week all of the clerks employed by the Michigan Central Railway between Detroit and Chicago went on a strike. About forty employees of the road in this city quit work. While the strike has not handicapped paper shippers to any extent up to this time, unless there is a speedy settlement, the indications are that serious difficulties may develop.

Sympathizers are already getting in their work and car tags are being removed from cars during the night. This prevents the trainmen from knowing where to ship the cars and considerable delay is experienced. Shippers are hoping that the strike will be settled at an early date.

Curious Questions under Compensation Law

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 2.—Can the King Paper Company be forced to pay for an accident which an employee first suffered in Holland ten year's before entering the employment of the King Paper Company? This is a question that the Industrial Accident Board of Michigan will be called upon to decide in a few days. Jacob Meyer, a farmer, living near the city, has presented a claim against the King Paper Company. Twelve years ago, while working in Holland, Meyer sustained an internal injury which forced him to give up hard work. He then came to America and went to work for the King Paper Company.

Three years ago, while lifting a bale of paper at the mill, he again suffered an injury in the same place, the injury being similar to the one he experienced in Holland. On the grounds that Meyer was already injured when he entered the service of the company, the officials refused to grant him compensation as allowed by the State, and now the Industrial Accident Board has been called upon to decide the case. The decision will be watched with considerable interest.

Points to New Fields for Trade

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 2.—For the purpose of interesting Kalamazoo paper manufacturers in the expansion of their business, Stanley H. Rose was sent to Kalamazoo last week by the Bureau of Foreign and Domestic Commerce of Washington. He pointed out to the papermakers new fields which have been opened to them as a result of the European war, and urged them to look into conditions thoroughly.

He cited Cuba, South America and the Orient as excellent fields in which to cultivate new business. The war, he told the manufacturers, had practically put Germany out of the paper business. Sweden had also practically stopped the manufacture of paper. In the past, he said, these two countries furnished the world's markets with an immense amount of paper, but owing to the fact that practically no paper was being exported from these countries, American paper manufacturers have wonderful opportunities of building up new trade.

President Milham a Delegate to Washington

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 2.—President Frank H. Milham, of the Bryant Paper Company, who also enjoys the distinction of being president of the Kalamazoo Chamber of Commerce, has just been named as Kalamazoo's delegate to the convention of the National Chamber of Commerce, which will be held in Washington during February. Mr. Milham has taken a great interest in community building work, and his selection as the city's delegate to this meeting is looked upon with favor.

An American consular officer in Honduras reports that an importer desires to secure bids on 500,000 manila paper bags of the common square-bottom type. The sizes required range from one-fourth pound to 12 pounds. Quotations should be made f. o. b. New York or New Orleans. Refer to file No. 18,872.

Developments in New England Mills

[SPECIAL TO PAPER]

HOLYOKE, Mass., Nov. 2—The United States Envelope Company announced the past week through Col. W. C. Hayes of the 2nd Regiment that it will give full pay to its employees while absent on tour of duty with the State militia. The company has mills in Holyoke, Springfield and Enfield.

President Arthur C. Hastings of the American Writing Paper Company has returned to the city after a trip of several weeks' duration to the Pacific coast. The company is doing a largely increased business over what was being done and it is estimated that the mills are operating within 90 percent of capacity.

James J. Moran, a foreman for many years at the plant of the Crocker-McElwain Paper Company and later with the Cantine Paper Company, of Saugerties, N. Y., died at his home in Holyoke last week.

The notice served by the Interstate Commerce Commission relative to complaints on the delaying of cars, does not affect the local paper mills, as most of the paper mill freight goes out in carload lots and the paper mill shipments are handled speedily for the most part.

The Holyoke Water Power Company at its annual meeting last week reelected its board of directors and the officials of the company.

S. R. Whiting, of the Whiting Paper Company, has purchased an interest in Des Arts Studio, Inc. This firm makes a specialty of fine papeteries and paper novelties and within a few months will occupy greatly enlarged quarters in the upper stories of the new building being erected for the Holyoke Supply Company.

Owing to the breaking of the governor on the engine that furnishes power to the entire plant, the factory of the Ideal Coated Paper Company at Brookfield, Mass., had to close down for a day last week. The company is rushed with orders and the repairs were made as quickly as possible.

George F. Davenport is Dead

[SPECIAL TO PAPER]

George F. Davenport, a salesman in the employ of the Boston Belting Company, Boston, for nearly twenty-six years, died suddenly from heart-failure at his home in Ashmont, Mass., on Tuesday, October 19. Mr. Davenport was born November 22, 1852. He was well known among representative paper manufacturers, and had sold the products of the Boston Belting Company to paper mills located in New England for more than twenty-five years.

To Hear Evidence in Knowlton Suit

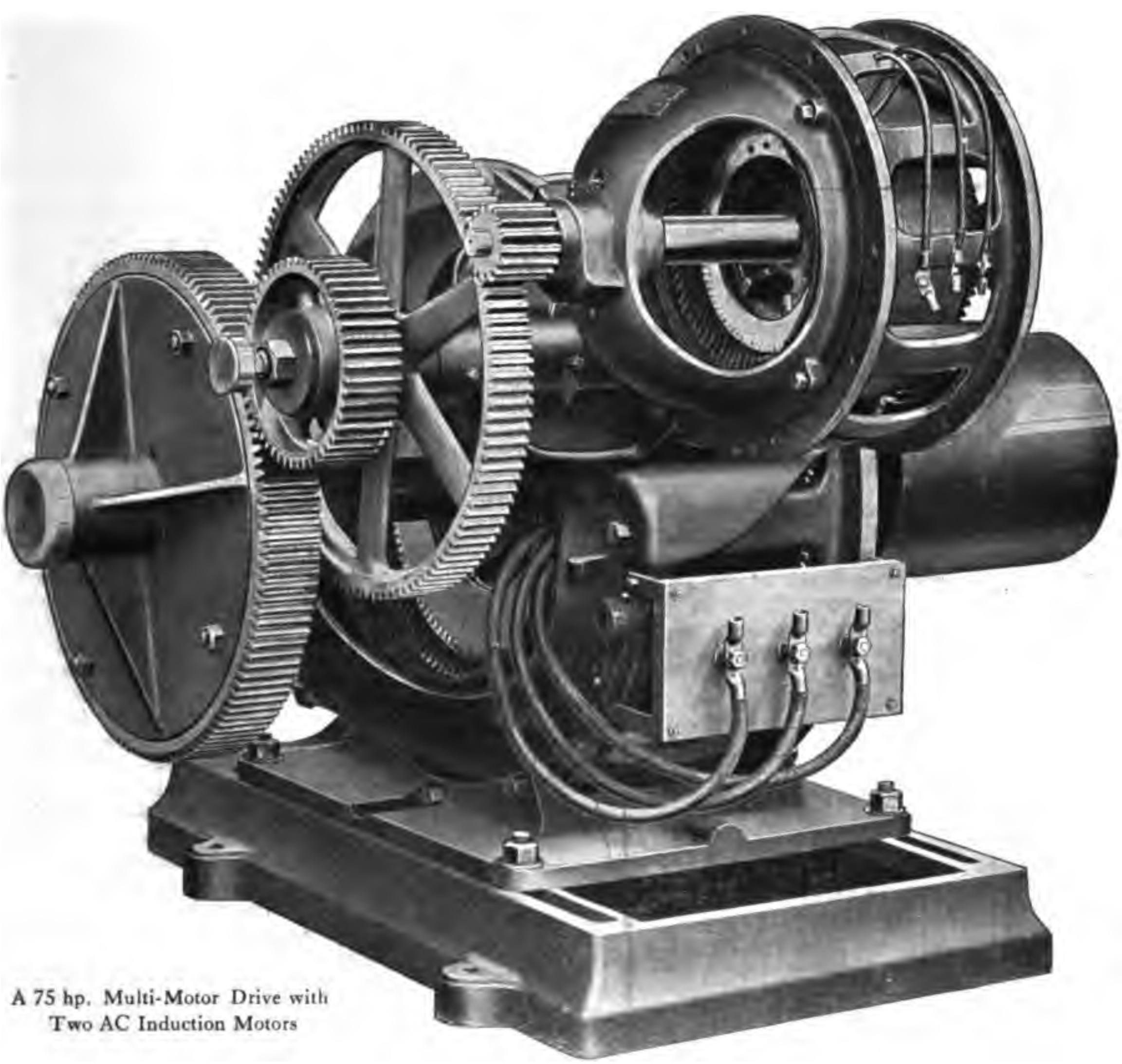
[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 2—Irving G. Vann, of Syracuse, former judge of the Court of Appeals will hear the evidence in the second trial of the action brought by Knowlton Brothers of this city against the New York Air Brake Company in the fall of 1911 to permanently restrain the latter concern from going ahead with its hydraulic development at the head of Beebee's Island, and also determining the riparian rights of each power owner about the island. The trial will be held in Albany, Judge Vann having recently been appointed referee by Justice William S. Andrews upon the application of the attorneys in the case.

The development if allowed to proceed would ruin the water-power of the plaintiff, whom it was shown according to the verdict in the first trial had extensive prior water rights about the island. This verdict was a great victory for the plaintiff, but the defense took the case to the Appellate Division, which reversed the decision and sent the case back for a new trial, which it is about to get.

BLACK RIVER.

A business man in Canada desires to receive catalogues and prices of cheap stationery; cheap bond paper; cover paper for mount boards, and aniline dyes. Refer to file No. 18,924.



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ANDERSON,
IND.

Writing Paper Association to Meet

[SPECIAL TO PAPER]

DAYTON, O., Nov. 2.—All the details are practically completed for the usual monthly meeting of the Writing Paper Manufacturers' Association, which will be held here on Monday, November 15. The date was originally fixed for November 1, but later it was found this would not be satisfactory because of the inability of several of the most prominent factors in the organization to be present at that time.

Secretary Emmett Hay Naylor, of New York, of the paper manufacturers' organization, and General Secretary J. M. Guild, of the Greater Dayton Association, through whose agency the meeting was brought to Dayton, got together on the matter, and the date was deferred until November 15.

It has been planned to devote the first day of the convention to a discussion of business details and trade conditions. The following day a trip will be made through the National Cash Register Company's factory, and a tour of inspection down the Miami valley through the paper manufacturing establishments.

MACHINERY FIRMS CONSOLIDATE

The consolidation last Saturday of the Reliable Sales Company and the Reliable Machine Company, of Anderson, Ind., is regarded as an interesting development affecting the papermaking industry and the allied trades. James Farrell, formerly interested in the Reliable Machine Company, sold out to Charles Rawlings, who has become one of the leading factors in the merged concern. Charles Martindale, who, with Mr. Farrell, has been in charge of the concern, will continue as active manager of the company, and the name of the merged company will be the Reliable Machine Company. The capitalization of the company will be $25,000. Both the plants affected by the merger have been engaged in the operation of a papermaking machinery manufacturing establishment, and for this reason the negotiations attracted some attention among Miami valley paper manufacturers.

Trade Commission Extending Export Inquiry

[SPECIAL TO PAPER]

WASHINGTON, D. C., Nov. 2.—The Federal Trade Commission announces that it will soon send out 30,000 letters of inquiry, followed up by a brief schedule, as a part of the investigation of conditions that affect American foreign trade. Congress has empowered the commission to make an investigation of these conditions and to report the facts with such recommendations as it deems advisable.

The war in Europe has so affected the trade of the world that American enterprise has a peculiar opportunity to supply the wants of foreign markets and to secure a greatly enlarged share of their trade. The commission, therefore, deems it to be its duty to complete with all possible dispatch an investigation which may assist Congress in determining what action may be required in the public interest for the promotion of American foreign trade.

By public hearings throughout the country and by other means the commission has been gathering facts and information as a basis for its report to Congress. It now wishes to obtain information from a large number of men who were unable to appear at the hearings. For this purpose these letters and schedules will be sent out.

About 20,000 letters will go to American manufacturers and producer, and about 10,000 will be sent to other authorities on foreign trade conditions, such as export commission merchants, manufacturer's export agents, importers, domestic merchants, publicists, lawyers, economists, bankers, engineers, etc.

A return postcard accompanying the letter is designed to give the commission a broad yes or no referendum on the advisability of export combinations, and to put it in touch with those who are willing to assist the commission by furnishing further facts and suggestions. To those who state that they will cooperate with the commission in furnishing facts, etc., the schedule of inquiries will be sent, covering the topics on which the commission desires information.

Through this letter of inquiry and schedule the commission particularly desires to get the facts from many different points of view and from all sides of controverted questions. Thus, the 20,000 names of manufacturers and producers include every important branch of American industrial enterprise and represent every shade of opinion in regard to the present problems of our foreign trade. The list takes in big business and little business; companies that are old in exporting and firms that are new; interests that want combinations among American manufacturers for export trade and men who are opposed to such organizations; manufacturers of specialties and producers of staples; concerns whose foreign trade is limited to South America or Europe and those whose products are sold all over the globe.

The 10,000 other persons to whom the letters of inquiry will be sent include even greater diversity of interest and thought. By obtaining facts and suggestions in this manner from a large number of persons with different experiences and points of view the commission expects to secure a great body of valuable information.

The schedules were prepared after careful consideration of the facts developed thus far in the investigation. In drafting the inquiries the commission has consulted noted economists and experts, leading business men in many important lines, and representatives of the Chamber of Commerce of the United States, the National Association of Manufacturers, the American Manufacturers' Export Association, the National Foreign Trade Council, and other organizations interested in the extension of export trade.

The schedules are brief and have been prepared to facilitate convenience in replying. Since foreign trade is of especial interest just now the commission is expecting a prompt response to this request for suggestions and information.

Some of the inquiries are designed to ascertain the general understanding of business men as to whether the antitrust laws prohibit export combinations among American manufacturers, and the views of men generally as to whether such combinations are in the public interest. Other questions are expected to develop highly interesting information in regard to "dumping" by foreigners, either in the United States or in other markets. Information is also sought concerning the operations of foreign combinations, and other conditions which affect American export trade.

The commission desires full and frank statements in reply, and the inquiries have been drafted with this purpose in view. Thus the person answering may designate any portions of his reply which he wishes held confidential and the commission will respect his wishes in this regard.

Where the answers received suggest that additional valuable details and facts are available the commission will supplement the schedules with a few further inquiries which will elicit fuller statements. All this work will be quickly rounded out and completed by visits from agents of the commission, in a few cases, if the study of the replies shows this course to be desirable.

In announcing the commencement of this work the commission was careful to state that the schedule inquiries are only one part of its study of conditions which may affect American export trade. In addition to the schedule inquiries and the series of public hearings which have been held, this study as planned includes several other important divisions. For some time employees of the commission have been engaged on systematic research work covering trade and financial papers, official publications and reports of the United States and foreign governments, and other published material. This has included not only publications in English, but also those in German, French, Italian and other foreign languages. In addition, agents will be sent abroad to study conditions on the ground. In this part of its work the commission will also receive assistance from the Department of State through the United States Consuls, and from the Department of Commerce through the Commercial Attachés. Through these different divisions of the work the commission is conducting an extensive investigation and hopes to make a comprehensive report to Congress.

Advices from Stockholm, under date of October 15, note that at a meeting of the Svenska Pappersbruksföreningen (Swedish Association of Paper Manufacturers) it was decided to make the price for sulphate and kraft paper £20 ($97) f. o. b. This is official.

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Apparatus for Making Sulphite Acid

Continued from page 19

chamber; and Fig. 6 is another section of the same on line *y—y* of Fig. 5.

In the showing of Fig. 1, element 1 represents a sulphur burner and 2 a sulphur feed therto. The burner delivers sulphur dioxide into conduit 3, valved at 4 and having an extension 5 leading to a stack (not shown) or other means of disposing of the waste gas. Below the valve is another communicating conduit 6 leading to absorber 7. Interiorly this absorber may have any usual construction, such as crossplates (not shown), baffles, etc. The inlet for sulphur dioxide enters the absorber at a low point. At the top, liquid, such as sugar liquor, water, lime water, milk of lime, soda solution, etc., is fed in through pipe 8, fed by pump 9 having steam inlet 10. The bottom of the absorber vessel is tapered to form a jet nozzle 11, surrounded by an injector casing 12. Between this casing and the top of the absorber extends a pipe 13. The outflow of solut'on from the absorber with this arrangement serves to cause a draft of gas through the absorber. Below the injector casing extends liquor pipe 14, which may have a bend in it to aid in the suction of the downgoing liquid. The end of the liquid pipe extends into reservoir 15, where it is liquid sealed. In this reservoir is located a float 16 having a stem 17 extending upward through guide 18 into engagement with rocker arm 19.

Fig 2

Fig 3

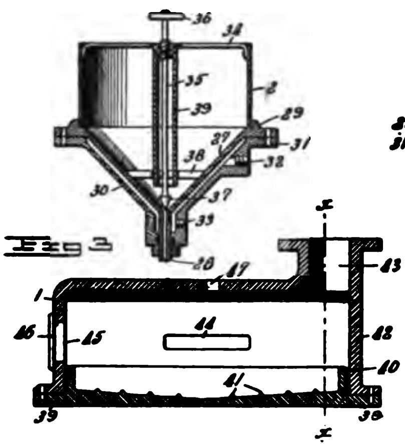


Fig 4

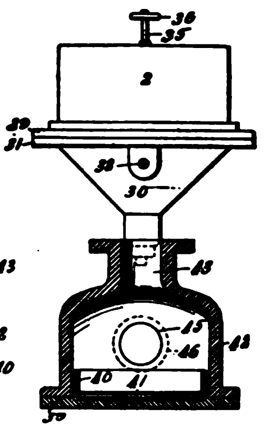


Fig 5

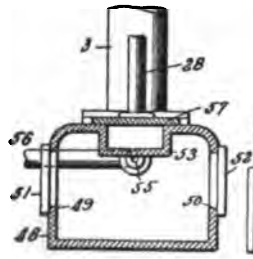
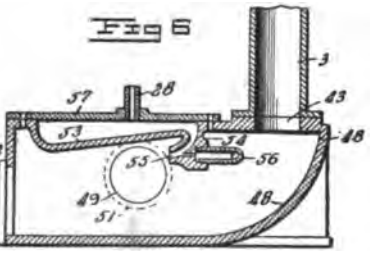


Fig 6



This rocker engages cross bar 20 which at one end controls valve 21 in the steam inlet of the pump supplying liquid to the absorber. Liquid is removed from the reservoir by pump 22 and sent to a place of use through pipe 23. Steam is furnished the pump by steam pipe 24 having a valve 25 controlled by the other end of the cross bar. The float stem may further actuate through a chain 26, or other suitable connection, the damper or valve (4) in the waist pipe for sulphur dioxide.

In Fig. 2 is shown in detail the construction of the sulphur feed (2) for the sulphur burner (1). In this feed device, there is a sulphur casing (marked 2) or hopper for containing sulphur. As shown, this is mounted in casting 27 of the general shape of a funnel, having a downward continuation as pipe 28. At the top it is laterally flanged at 29. Fitting around this casting but spaced away somewhat to form a chamber therebetween is a casing 30 having a corresponding lateral flange 31 at it stop. At the bottom it encircles the downward pipelike continuation of the casting, suitable packing means being employed to make a joint therebetween. Heating liquid may be led into the chamber through 32 and condensate discharged at 33. At the top, the sulphur hopper or casing may be bridged by bar 34 in which is a screw-threaded valve rod 35, provided with handwheel 36 and extending downward to a cone shaped valve plug 37 adapted to seat in the stated pipelike continuation (28) of the casting and close the same. Crossrod 38 may be provided in the sulphur hopper for supporting the valve rod. It is a useful expedient to surround the valve rod with a protective tubular jacket or casing 39. This sulphur feeding device may be used in connection with the form of sulphur burner shown in Figs. 3 and 4 or that of Figs. 5 and 6.

In Figs. 3 and 4, the burner is constituted by a bottom plate, flanged at 39′ and having an upwardly extending wall 40. The bottom slopes toward the center and is provided with a series of transverse ridges 41. Mounted on this bottom is a casing 42 provided with outlet 43 for sulphur dioxide and inlets 44 and 45 for admission of air, these inlets being suitably closed, as bv plate 46, for controlling the amount of air admitted. Inlet 47 permits the introduction of molten sulphur from the discharge pipe (28) of the sulphur feeding device. By allowing thinly liquid sulphur to drip down on the bottom or hearth the space between the first pair of ridges can be filled, and then, by overflow, the space between the second, and so on. The area of molten sulphur exposed for combustion can thus be adjusted and thereby the rate of production of sulphur dioxide.

In the structure of Figs. 5 and 6, in lieu of directly delivering the thinly liquid molten sulphur to a burning hearth, it is delivered to a volatilizing hearth or retort and sent into the burner proper as vapor. In this structure element 48 is a boxlike casting having an outlet 43 for sulphur dioxide. At opposite points are two air inlets, 49 and 50, adjustably closed by doors 51, 52. At its top, the casting has a volatilizer element or hearth 53 sloping downwardly toward one end. At the other end it is provided with a channeled downward prolongation 54, the channel being arranged to form a jet nozzle 55. Seated in this prolongation and in open communication with the nozzle is air pipe 56 leading from a suitable source (not shown)of air under pressure. Mounted above this volatilizer eelment, and closing the retort chamber which it forms, is a plate 57 carrying the inlet pipe (28) from the sulphur feed.

In the operation of the present invention, sulphur molten at a temperature at which it is thinly liquid and will flow freely, best around 120° Cent., is fed down into the sulphur burner from 2. Here it is converted into sulphur dioxide which ascends through pipe 3. If for any reason the apparatus is temporarily out of function as regards using the sulphur dioxide, the gas may be allowed to escape through 5. Normally, however, the gas passes by 6 into 7 where it is met by downflowing water, sugar liquor, or water and base, according to whether sulphurous acid or an acid sulphite is desired. The saturated solution escapes downward through 11 and pulls residual gas from the ab-

Concluded on page 34

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New Sources of Paper Fiber

IN a report to the Bureau of Foreign and Domestic Commerce, dated Buenos Aires, Argentina, August 23, 1915, Consul General W. Henry Robertson gives some interesting particulars concerning new fibers for papermaking. This and reports of allied work are published in a recent issue of *Commerce Reports*, as follows:

ARAUCARIA PINE USED SUCCESSFULLY

The success that attended the experiments undertaken some time ago by the Argentine Bureau of Forestry to produce a commercial pulp from the pines (*Araucaria imbracata*) of Neuquen territory directed attention to other pine-bearing areas of the Republic, and announcement has just been made of the successful conclusion of similar experiments with cellulose from Misiones.

The Misiones pines, although possessing characteristics different from those of the trees of Neuquen, show practically identical results. The fiber of the former is longer, but, on the other hand, that of the Neuquen pine is more resistant, and in both cases half a ton of pulp can be obtained from a ton of the wood. Another basic difference offered by the pine of Misiones is that it has its resin between the wood and the bark, thus obviating the necessity of extracting that product.

The experiments with Misiones trees were not made with white pine, but with a specimen whose wood had a reddish color, due to soil influences. In spite of this, the fiber when treated with bisulphite gave a pulp surpassing in whiteness that of the paper materials which are imported from Europe.

The following comment on the outcome of the Bureau of Forestry's work is from local newspapers:

It is needless to dwell upon the importance of these experiments and the opportunity they offer for the promotion of an industry which, in a more or less short period, is capable of becoming a constant source of riches. If, as the results of the experiments made up to now allow it to be hoped, the pulp obtained from the pine trees of Neuquen and Misiones is a good article commercially, the enormous supplies of these forests will permit the satisfying of the national needs and the exportation of the remainder. Moreover, the stands of pine in Misiones are largely on public lands, so that the Government would be the first beneficiary from their industrial utilization.

Prior to the war in Europe—that is to say, in the year 1913—there were imported into Argentina more than 70,500,000 pounds of woodpulp, 8,289,400 pounds of which came from Germany, 19,290,500 pounds from Norway, 38,801,400 pounds from Sweden, 1,964,300 pounds from the United States, 910,500 pounds from Denmark, 846,500 pounds from Holland, 343,900 pounds from Switzerland, and 264,500 pounds from Austria.

HEDYCHIUM CORONARIUM

Commenting on the possible advantages of bedychium as a papermaking fiber, the ***Indian Trade Journal*** says it is problematical whether it will ever be used to any large extent in other countries, but it seems worth while for Indian papermakers to give it their attention. This plant of the ginger family is distributed from Himalayas to Ceylon and Malakka, ascending to 4,000 feet in the Khasia Hills and 6,000 feet in Ceylon. It is also native in Central America, the West Indies, New Zealand, Mauritius, and Wes Africa (Corsico Bay). Many years ago it was introduced into Brazil, where it has been wild in many of the States. In India the plant appears to thrive best in swampy tracts, but here also it runs wild.

As the papermaking material it seems to have first been put forward by Brazil, but those who have experimented with it are disposed to think that ***Hedychium coronarium*** will yield good papermaking qualities from whatever part of the world it is gathered, and that any differences in the pulp from Calcutta as compared with that from Brazil are to be attributed to the method of preparing the raw fiber prior to shipment rather than to any variation in the growth of the plant itself. The pulp it yields is easy to manipulate and is capable of producing a paper of exceptional strength.

In India hedychium is a common wild plant in swamps and wet places, and on the edges of paddy fields. It is easily propagated. In one of the plantation districts of the south the estates are very much broken up with valleys and nullahs, the latter carrying off monsoon water, and consequently there are many swamps which can not be put under either tea or coffee. These are a source of trouble to the planter, since they grow weeds that seed into cultivated areas, and are apt also to be reserves of scales, grasshoppers, and various harmful insects, which escape to the coffee and tea.

It was suggested some years ago that such swamps might be planted with a plant that could be kept under control and cut and used as a mulch. The suggestion was adopted. In at least one instance hedychium was the plant selected as a useful, clean weed. It was a great success. It grew quickly, exterminating all other weeds and shrubs; and each year it is cut at regular intervals and used as a mulch for the grower's staple products. The same plan is now being carried out on other areas, and there is no doubt that the supplies of the plant could be increased very largely.

It has been grown also in British Guiana, and a recent report states that the first planting produced 28 tons of stalk and leaves per acre as a five months' crop on dry land. On irrigated land the first trial failed.

SUCCESSFUL GERMAN EXPERIMENTS WITH HOP VINES

Announcement has been made of the results of experiments undertaken by the Institute of Chemical Technology at Brunswick looking toward the discovery of new and cheaper methods of manufacturing paper from vegetable fibers. Willow-tree bark and broom fiber did not give satisfactory results. Experiments were then made with the fiber of hop vines, of which there is a plentiful supply in Germany.

It was found that the when the fibers are treated with lye their separation is difficult. They are more easily separated by soaking in a 0.5 percent solution of a mineral acid. The same result can be obtained by a steam pressure of half an atmosphere. Separation of the fiber is easier when working with old hop vines that have stored for a long time in the open air. It follows that storage in the open air or, better still, artificial storage in a warm, moist storehouse, is the best method of furthering separation. In this way a return of 20 percent of good fibers was obtained.

The remaining wood, when treated with 6 percent caustic soda lye under a pressure of 45lb, produced an excellent paper pulp, and the roots of the vines yield an especially long fiber.

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This man with a reputation as an "efficiency expert" was sure that he had stopped every power leak. But after reading our "Story of Some Friction Tests," he realized that he had overlooked the stuffing boxes of the engines.

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(PAPER)

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Apparatus for Making Sulphite Acid

Concluded from page 30

sorber through 13, thereby causing a draft through the entire apparatus. As the solution accumulates in 15, the float rises closing the steam inlet to pump 9, thereby stopping the feed of liquid to the absorber and also the draft through the sulphur burner and system generally. At the same time, the waste gas outlet damper 4 may be opened to dispose of any residual sulphur dioxide in case the rise is sufficient to stop operation. The rise in the float, however, tends to open valve 25 allowing steam to go to pump 22 and discharge liquid from the reservoir through 23. As will be perceived, the whole system is governed by the float in the reservoir and is very sensitive to changes in demand for liquor.

In the sulphur feed, the amount of steam led into the heating jacket should be that which will just about melt the sulphur sufficiently to form a thinly liquid product which will feed regularly through 28. Any increase in temperature over about 140° Cent., will prevent the regular feed necessary in the present invention. The liquid sulphur in the furnace of Fig. 3 is introduced at a rate which will form a pool of the desired area on the hearth, the ridges 41 aiding materially in gaging the exposed area. The amount of sulphur burning per time unit is, of course, proportional to the surface area. In the furnace of Fig. 6, the thinly liquid sulphur delivered from 28 runs down to the deepest part of the hearth where it is boiled or volatilized by the heat of the combustion below and the vapors passing out through 55 are carried forward by a jet of air from 56, thus forming a flame plume of burning sulphur immediately below the hearth and partly impinging thereon.

William Robinson, late with Price Bros. & Co., has joined the staff of the Laurentide Company, which he represented for several years in Great Britain.

Zacaton Grass for Paper Stock

ATTENTION is called to the possibilities of zacaton grass in the manufacture of paper in a new professional paper of the United States Department of Agriculture, Bulletin No. 309. Zacaton grass extends from California and Texas southward to the Argentine Andes. It grows most profusely, however, in the mountain regions east and west of the City of Mexico, where it is harvested for the sake of its roots. These are made into brushes of various sorts, and for this reason zacaton plant is frequently known by the common English names of broomroot grass, wire grass, and rice-root grass. At the present time the tops of the plant are allowed to go to waste. It is from these that there is reason to believe that a satisfactory papermaking material may be developed.

An acre of grass should yield at least three tons of tops. The plant is a perennial one, the growth being almost entirely from self-sown seed. Unless checked by fire, cultivation, or the harvesting of the roots, the grass will soon cover a field solidly, and it is not uncommon to find many square miles densely covered with the growth. The range can be profitably gone over for roots every third year.

Laboratory tests of this grass conducted by the United States Department of Agriculture show that it can be chemically reduced to paper stock by the soda process more easily and with less expense than is necessary to reduce poplar wood. The same processes and methods which are employed for the manufacture of pulp from poplar wood are quite suitable for the treatment of zacaton, but in place of the wood-sawing, chipping and screening machinery a grass duster is necessary.

The percentage of air-dry fiber obtained from the zacaton grass appears to be somewhat less than from poplar wood, but practically equal to that of esparto.

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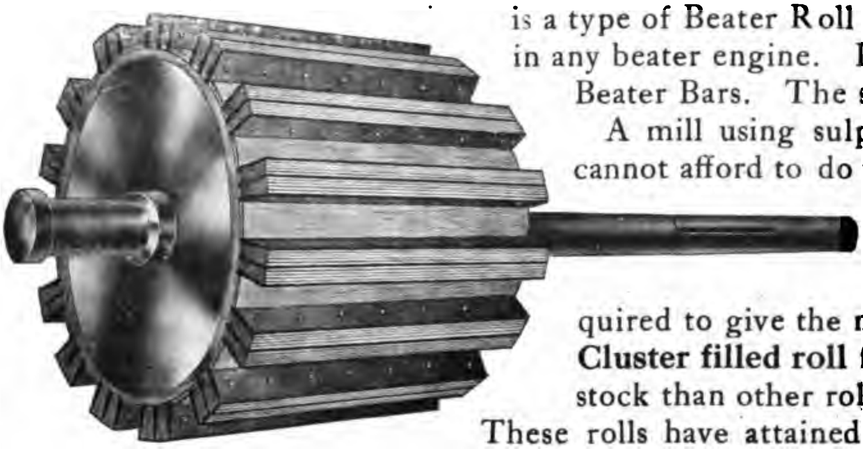

is a type of Beater Roll filling which we install in any beater engine. It is put in as are ordinary Beater Bars. The same rings are used.

A mill using sulphate or sulphite stock cannot afford to do without **Cluster Filling.**

Where mechanical wood pulp is employed, less sulphite is required to give the needed strength, since a **Cluster filled roll** furnishes a longer fibered stock than other rolls.

These rolls have attained great success in fiber mills, particularly in tissue and kraft mills, and they are in use in many mills from Maine to California. Some mills have installed as many as nine sets of **Cluster Filling.**

If you desire to make stronger paper this equipment will help you attain the desired end.

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THE MARKETS

New York, November 1, 1915.

MECHANICAL PULP

From the producer's point of view the situation of the market for groundwood is unsatisfactory, but paper mills equipped with grinding machinery are not complaining. Orders booked for domestic accounts were few and unimportant during the past week. Prices, however, are fairly well maintained in the face of a good inquiry from exporters and we are informed of additional large transactions at full prices for prompt shipment. Several sizable lots were recently reported sold afloat from Scandinavia for transhipment to England. In some quarters it was intimated that fairly large lots are under consideration for early sale. Prices are firm at the quoted range of $15.50 to $16.50 as to terms of sale f. o. b. grinding mills.

DOMESTIC AND FOREIGN CHEMICAL PULP

A decidedly firmer tendency of values features the market and importers are looking for further price advances, based on scarcity and rising markets abroad, caused by an active European demand together with a steady increase in the cost of the raw materials. The scarcity of supplies on docks continues to restrict business on a larger scale. Arrivals for the week just ended here and at outports were fairly large in the aggregate. The bulk of supplies comprised deliveries on outstanding contracts which were booked during the past six to nine months. No fears are being entertained by importers, relative to English submarines hampering shipping of chemical pulp from Scandinavian ports to Germany. Quotations locally closed strong but nominal, showing net appreciations of 20 to 30c and 15 c on both domestic and imported bleached and unbleached sulphites respectively. Several orders have been cabled at full limits to Scandinavian and Norwegian markets but no business of importance resulted, as holders appear indisposed to quote at current figures.

Sulphite, foreign—		Soda, domestic—	
Bleached, ex-dock	3.20 @ 3.50	bleached delivered	2.25 @ 2.35
Unbleached, ex-dock	2.10 @ 2.25	Scandinavian Kraft	2.10 @ 2.20
Sulphite, domestic—			
Bleached, ex-dock	3.00 @ 3.10		
Unbleached, ex-dock	2.05 @ 2.25		

BAGGING, ROPE, ETC.

The better qualities of bagging are selling slowly, owing to the quotations of holders being above buyer's views. In the medium and lower varieties trading continues active and prices closed strong and in upward tendency owing to smaller spot stocks and moderate arrivals. Rope and waste are finding a steady outlet at current quotations. No price changes of importance were announced, and dealers as a rule are confidently looking for higher values in the near future.

Gunny, No. 1	1.90 @ 2.05	Wool Tares, light	1.70 @ 1.75
No. 1 Mill run	1.50 @ 1.70	Wool Tares, heavy	1.65 @ 1.70
Domestic	1.65 @ 1.75	Foreign Manila rope	2.65 @ 2.75
Light Burlap	1.65 @ 1.75	Domestic Rope	2.80 @ 2.85
Mixed Bagging	1.05 @ 1.10	Mixed Rope	1.10 @ 1.15
Sound Bagging	1.25 @ 1.30	Flax Waste	3.50 @ 4.05

IMPORTED RAGS

Small arrivals of rags and limited spot stocks resulted in a firmer market, with dealers in some instances holding off for higher values. Inquiries continue fairly active, but business on a large scale has been restricted materially, owing to buyers and sellers being apart in their views as regards prices. Small orders booked for the week were fair in the aggregate, and involved mostly lots for immediate delivery.

German Blue Cottons	2.25 @ 2.35	German Linen Blues	3.50 @ 4.20
Dutch Blues	2.25 @ 2.35	German Linen, Gray	4.50 @ 5.50
French Light Blues	2.25 @ 2.40	German S. P. F.'s	3.50 @ 3.60
New Light Prints	3.75 @ 4.50	German Light Prints	2.00 @ 2.45
New Mixed Prints	3.00 @ 3.50	Dark Colored Cottons	1.15 @ 1.20

DOMESTIC RAGS

Freer inquiries and inadequate spot stocks to meet the growing demand led to a further slight advance in price, representing ¼ to ¾c a pound on most varieties. Sales during the week were chiefly of the better graded qualities, while the remainder of the selections showed a larger movement of supplies into consumption for the week just ended. There has been no noticeable improvement in collections, but the outlook is more favorable in this direction.

New Shirt Cuttings, No. 1	5.45 @ 5.95	No. 1 Whites	3.38 @ 3.70
New Shirt Cuttings, No. 2	3.65 @ 3.90	Soiled Whites, street	1.50 @ 1.65
Fancy Shirt Cuttings	3.50 @ 3.80	Soiled Whites, house	2.15 @ 2.45
New Blue Cottons	2.75 @ 3.20	Thirds and Blues	1.70 @ 2.20
New Dark Cotton	1.90 @ 2.00	Satinette Garments	1.30 @ 1.35
New Unbld Cuttings	5.50 @ 6.00	No. 3 Satinettes	1.20 @ 1.25
New Black Cottons	1.95 @ 2.20	No. 4 Satinettes	1.00 @ 1.15
		No. 1 Tailor's Rage	1.20 @ 1.30

TWINES

A firmer trend is noticeable throughout the market, particularly on twines, though no further price advances have been announced by manufacturers. Buyers appear to be pursuing a more cautious policy and trading in large lots has lacked animation, following the sharp rise in prices toward the close of the preceding week, and we hear of transactions for domestic and export accounts at price concessions. Owing to the uncertainties surrounding the market for raw materials and unfavorable shipping facilities, few orders for forward delivery are being booked by cordage mills. In rope trade has been fair at former values.

Sisal Hay	8½ @ 9	Jute Twines, 36	13¼ @ 13¾
Sisal Lath Yarn	8 @ 8½	Jute Twines, 46&60	13¾ @ 14
Manila Rope	12½ @ 13	Jute Twines, 4½&6	9 @ 9½
Manila Rope, No. 2	11½ @ 12	Paper Makers' Twine	8 @ 8½
Jute Rope	6¾ @ 7¼	B. C. Hemp, 18	19½ @ 19¾
Jute Wrapping Twines— 2 to 6 ply—		B. C. Hemp, 18	19 @ 19½
No. 1	12½ @ 13	B. C. Hemp, 36	18½ @ 18¾
No. 2	10½ @ 11	Amer. Hemp, 4½&6	17 @ 17½
Jute Twines, 18	14¾ @ 15		
Jute Twines, 24	14¼ @ 14½		

OLD PAPERS

A steady movement of supplies into consumption and further inroads made in spot stocks have led to a strong market, with prices in upward tendency. Inquiries continue good and appear well distributed over the entire list of old papers. Dealers in most quarters are looking for higher values and price shading is less in evidence. The medium and lower descriptions have been mostly traded in throughout the week, while large sales of the better graded qualities are being booked at steady to firm current values. Quotations closed

Continued on page 38

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Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

Many an anxious millwright holds himself in readiness, many nights expecting the Wood and Steel filled Jordan to tear out. Buy him our Positive Filling; then he knows positively his Jordan will not tear out.

Our Fillings, also our Refillable and Double-face Beater Bed Plates, are recommended by the smallest and largest mills to anyone using a Jordan or Beating Engine.

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Sizing
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Parsons Trading Company
Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 36

unchanged, no fluctuation of importance having been announced throughout the week.

No. 1 Hard White Shavings	2.45 @ 2.55	White Blank News	1.05 @ 1.10
No. 2 Hard White Shavings	2.10 @ 2.15	Extra Manila Cuttings	.90 @ .95
No. 1 Soft White Shavings	1.70 @ 1.75	New Manila	1.30 @ 1.35
No. 1 Colored Shavings	.80 @ .85	No. 1 Manila	.65 @ .70
No. 2 Colored Shavings	.60 @ .65	No. 2 Manila	.35 @ .40
Magazine Flat Stock	.90 @ .95	Box Board Chips	.30 @ .35
No. 1 Crumpled	.70 @ .75	Bogus and Mill Wrappers	.42 @ .45
Solid Ledger Stock	1.75 @ 1.80	Strictly Overissue News	.50 @ .55
Ledger Stock	1.35 @ 1.45	No. 1 Mixed	.30 @ .32
		Folded News	.35 @ .40
		Common Papers	.25 @ .30

CHEMICALS

There continues a large movement of supplies on outstanding contracts, which, coupled with active inquiries, some spot scarcity, and an inability to secure goods for prompt delivery, has contributed to an upward tendency of values covering the entire list of papermaking chemicals. Bleaching powder on the spot is strong but sales are being interrupted by limited offerings; holders are quoting 3¾c a pound for spot lots, while parcels for forward delivery closed at 3 to 3½c a pound as to terms of sale; a fair volume of export orders has been booked at about 4⅜ to 4½c a pound. Caustic soda is selling freely at 5⅛ to 5⅞c a pound; for 74 to 76 percent for prompt shipment; withdrawals on outstanding orders continue large; offerings of parcels for delivery over the next 30 to 60 days are limited. Contracts for domestic covering 1916 deliveries closed at 2½c and above for basis 60 percent. Sal soda prices are tending upward in sympathy with the crude material and a heavier demand; holders are quoting .60c and upward for barrelled supplies, f. o. b. shipping point. Spot lots of concentrated are selling at 1½c and above as to quantity ordered. Alum is scarce and in active request; ammonia alum is selling at 4c and 5⅜c for ground and powdered, respectively; sulphate alumina closed at 2c and 1⅝c for high and low grades, as to terms of sale, respectively. Brimstone is finding a good outlet at $22 to $22.50 a long ton as to point of shipment. China clay is in better demand and sales involved sizable lots at $8 and above and at $12 and over a ton for domestic and imported, as to quantity and quality ordered f. o. b. New York, respectively.

Imports—Rags and Paper Stock

AT NEW YORK

Week Ended October 30, 1915

WOODPULP

Nilsen Rantoul & Co., str. Frederick 8th, Copenhagen, 150 bs. (30 tons) dry sulphite.

J. Andersen & Co., by same, Christiania, 3,800 bs. (475 tons) dry sulphite.

Salomon & Co., by same, Copenhagen, 305 bs. (61 tons) dry sulphite.

M. Gottesman & Son, str. Oscar 2nd, Stockholm, 750 bs. (175 tons) dry sulphite.

MISCELLANEOUS PAPER STOCK

G. W. Millar & Co., str. Rapidian, Leith, 245 bs. jute cloth cuttings.

H. Thomas, by same, 50 bs. bagging.

Castle, Gottheil & Overton, by same, 65 bs. twine waste, 16 bs. jute waste.

W. Cleghorn, Ltd., by same, 33 bs. jute thread waste.

Daniel M. Hicks, by same, 120 bs. linen factory waste.

Maurice O'Meara & Co., by same, 57 bs. thread waste.

Salomon & Co., by same, 46 coils old rope.

Brown Bros. & Co., str. Tuscania, Glasgow, 51 bs. jute bagging, 16 bs. old cotton rags, 15 bs. bagging, 13 coils old rope, 48 bs. paper stock.

W. Hughes & Co., str. Baltic, Liverpool, 65 bs. bagging.

L. H. Abenheimer, by same, 38 bs. scrap bagging.

W. O. Davey & Co., str. St. Paul, London, 158 bs. old rope.

F. T. Montell & Co., str. Morro Castle, Nassau, 4 bs. sisal waste.

E. Maurer, by same, 10 bs. sisal waste.

Cohen & Co., by same, 7 bs. sisal waste.

L. H. Abenheimer, str. Colorado, Hull, 49 bs. linen waste.

Gatti, McQuade & Co., by same, 67 bs. linen waste.

W. Hughes & Co., by same, 18 bs. old bagging.

Salomon Bros. & Co., by same, 92 bs. flax card waste.

Richard & Co., str. Caserta, Naples, 682 bs. cotton waste.

CHEMICALS

Troy Laundry Machine Mfg. Co., str. Lapland, Liverpool, 50 cs. bleaching powder; 55 cs. caustic soda.

J. L. & D. S. Riker, by same, 50 cs. bleaching powder.

Arnold Hoffman & Co., str. Cloughton, Liverpool, 172 csks. bleaching powder.

AT BOSTON

Brown Bros. & Co., str. Samland, London, 207 coils old Manila rope.

Trice & McLelland, str. Colorado, Hull, 38 bs. flax waste.

Hollingsworth, Vose & Co., by same, 224 coils old rope.

Brown Bros. & Co., by same, 164 coils old rope.

Baring Bros. & Co., by same, 108 coils old rope.

AT BALTIMORE

M. Gottesman & Son, str. New Sweden, Gothenburg, 500 bs. (125 tons) 538 bs. (75 tons) 1,000 bs. (225 tons).

M. Gottesman & Son, str. Alexandria, Gothenburg, 750 bs. (175 tons) 445 bs. (75 tons) woodpulp.

AT NEWPORT NEWS

M. Gottesman & Son, str. New Sweden, Gothenburg, 800 bs. (125 tons) woodpulp.

M. Gottesman & Son, by same, Christiania, 406 bs. (60 tons) woodpulp.

M. Gottesman & Son, str. Alexandria, Gothenburg, 500 bs. (125 tons) woodpulp.

AT PHILADELPHIA

Castle, Gottheil & Overton, str. Kellbergen, Rotterdam, 316 bs. rags.

M. Gottesman & Son, str. Tula, Stockholm, 2,730 bs. (22 tons) woodpulp.

M. Gottesman & Son, str. New Sweden, Stockholm, 1,600 bs. (250 tons) woodpulp.

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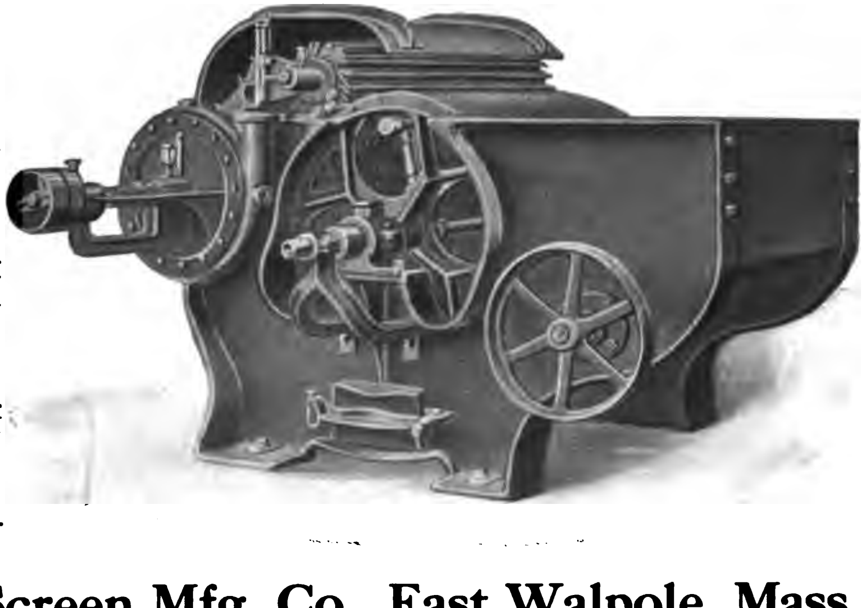
The WANDEL SAVE-ALL will remove sawdust, leaves and mechanical dirt, at less cost than any other system.

It is the ounce of prevention.



Wandel Screen Mfg. Co., East Walpole, Mass.

Herbert S. Kimball Increases Staff

H. W. French (Mass. Inst. of Tech '08) has recently joined the staff of Herbert S. Kimball, of Boston, mill architect and industrial engineer. Mr. French has had four years experience at the mills of Tileston & Hollingsworth, as chemist and engineer.

Mr. Kimball's experience in sulphite mills dates back to the old Howland mill in 1891 and since then has been identified with the pulp and paper industry in New England and to some extent in Canada.

Mr. French will bring to his new position a fund of practical experience in the design of paper mill refinements. He is a member of the Technical Section of the American Paper and Pulp Association.

British Commercial Organizations

[SPECIAL TO PAPER]

WASHINGTON, D. C., Nov. 2.—The Bureau of Foreign and Domestic Commerce, Department of Commerce, has been studying British commercial organizations and has just published a booklet that is full of concrete, pertinent facts on the subject. The world-encircling foreign commerce of the United Kingdom bulks large in the consideration of every phase of the international economics; it is a factor to be reckoned with in the most famous marts and in distant jungle and desert stations. Americans engaged in developing export trade observe its manifestations in many lands, but with the system back of this activity, the methods and conduct of commercial affairs in the United Kingdom itself, the way in which the British Government fosters and directs expansion, the people of the United States are, perhaps, not so familiar.

In 1912 the Commercial Intelligence Branch of the British Board of Trade received 16,488 inquiries concerning trade possibilities, and in replying to these the branch was enabled to draw on a store of information supplied by a corps of investigators covering every part of the globe. If British exporters want concrete samples, the Government has available for inspection such articles as cotton vests from Bushire, Persia; raisins from Azerbaijan; antimony from Chungking, China; kieselguhr from Chile; hosiery and overalls from South Africa.

The title of this new publication of the Bureau is "Commercial Organizations in the United Kingdom" and its author is Archibald J. Wolfe, who has investigated the subject on the ground. In its fifty-three pages are included lists of all British chambers of commerce and a discussion of their methods and functions, a detailed account of the State aid to trade, and a description of manufacturers' and employers' organizations in all the leading industries.

The pamphlet is obtainable from the Superintendent of Documents, Washington, D. C., for five cents.

At a "Pulp and Paper" Examination

At an examination in the Paper and Pulp School of one of our universities, a candidate was asked to tell what he knew about Fourdrinier, the inventor of the continuous paper-making machine. His answer was:

"Fourdrinier devoted all his money to developing the machine, to such good purpose that it was named after him and he died in the poor house."

The professor who favored us with the foregoing tells one on himself. "Having explained the air-jet lift, acid egg and montejus, one of the boys asked if the montejus was the best. I quite inadvertently replied, 'Well, it beats the egg, anyway.'"

Turkey's Imports of Paper

Paper is an item of some consequence among Turkish imports. According to information given in a report to the Bureau of Foreign and Domestic Commerce by Consul General G. Bie Ravndal, Constantinople, Austria supplies about 55 per cent, Germany 40 percent, and other countries 5 percent. Austria commands the market because it is in a position to quote low prices and, furthermore, grants liberal credit. Quality is not looked for in Turkey primarily. Wholesale dealers prefer credit, because most of them work with a small capital and carry but limited stocks; small orders are given and filled from Austria within two weeks.

Sweden's Largest Paper Mill Completed

The largest paper mill in Sweden, considered to be one of the world's foremost in point of technical perfection, has just been finished in the town of Hallsta, according to a report by Chargé d'Affaires Jefferson Caffery, dated American Legation, Stockholm, September 16, 1915. The situation is favorable because of the good harbor, easy communication with Stockholm, and possibilities of procuring cheap power. Dwellings will be erected for the employees. A concrete quay 310 meters (1,017 feet) long has been constructed, the water being deep enough for large vessels. The factory has machinery of the most modern character.

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Waterbury Seamless Wet and Press Felts and special Felts and Jackets to suit your condition.

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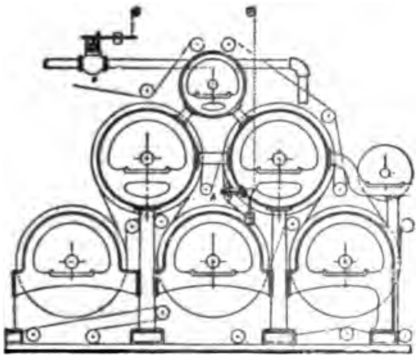
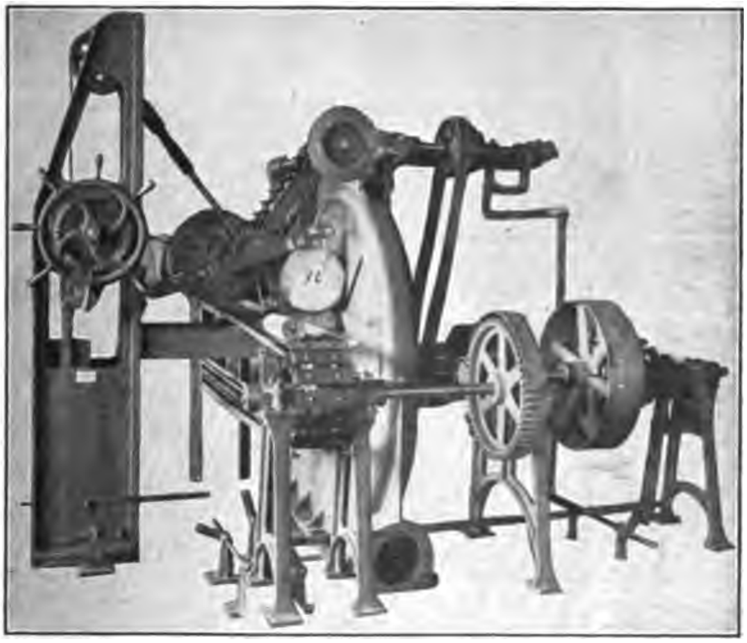


Reasons why you should have it on your machine are: First, it regulates the drying of paper automatically, irregularities are eliminated; second, higher machine finished papers are attainable, because it is poss ble to maintain the proper quantity of moisture in sheet, as it passes to calenders; third, mills having tried it on one machine have ordered it for all their machines. Full particulars upon application to

W. F. PICKLES, - Buckland, Conn.

The LeMoine & Schafer Barker Attachment Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

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ACID SYSTEMS
Barker, E. R., Boston, Mass.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

ANALYTICAL AND CONSULTING CHEMISTS
Barker, E. R., Boston, Mass.
Emerson Laboratory, Springfield, Mass.
Kleiner, Dr. E. G., and Knudsen, K. Hv., New York
Little, Arthur D., Inc., Boston, Mass.
Williams, F. M., Watertown, N. Y.

ANILINE COLORS
Farbwerke-Hoechst Co., New York.
Klipstein & Co., A., New York.

ARC LAMPS
General Electric Co., Schenectady, N. Y.

ARCHITECTS AND ENGINEERS
Barker, E. R., Boston, Mass.
Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Ferguson, Hardy S., New York.
Field, William T., Watertown, N. Y.
Hardy, George F., New York.
Hungerford & Terry, Philadelphia, Pa.
Kimball, Herbert S., Boston, Mass.
Prather, H. B., Cleveland, O.
Smith, F. L., New York.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

ABESTINE PULP
International Pulp Co., New York.

AUTOMOBILE TIRES
Quaker City Rubber Co., Phila., Pa.

AUTO STARTERS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

BABBITT METAL
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

BARKERS
Appleton Machine Co., Appleton, Wis.
Holyoke Machine Co., Holyoke, Mass.
Valley Iron Works Co., Appleton, Wis.

BEATERS
Dilts Machine Works, Inc., Fulton, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Jones, E. D., & Sons Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.

BEATER BED PLATES
Bahr Bros. Mfg. Co., Marion, Ind.

BELTING
Boston Belting Co., Boston, Mass.
Ladew Co., Inc., Ed. R., Glen Cove, N. Y.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rosendale-Reddaway Belting & Hose Co., Newark, N. J.

BINDERS' BOARD
Fandango Mills, Millburn, N. J.

BLEACHING POWDER
Arnold, Hoffman & Co., Inc., New York.
Klipstein & Co., A., New York.
Penn. Salt Mfg. Co., Philadelphia, Pa.

BOARD MACHINES
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

BOOK PAPER
American Writing Paper Co., Holyoke, Mass.
Oxford Paper Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.

BRASS WIRE CLOTH
Appleton Wire Works, Appleton, Wis.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Parsons Trading Co., New York.

BRIMSTONE
Union Sulphur Co., New York.

CALENDER ROLLS
Farrell Foundry & Machine Co., Ansonia, Conn.
Holyoke Machine Co., Holyoke, Mass.
Perkins, B. F., & Son, Inc., Holyoke, Mass.

CALENDERS
Holyoke Machine Co., Holyoke, Mass.
Norwood Eng. Co., Florence, Mass.

CASEIN
Atterbury Bros., Inc., New York.
Kalbfleisch Co., Franklin H., New York.
Klipstein & Co., A., New York.

CASTINGS
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

CAUSTICIZING EQUIPMENT
Scott, Ernest, & Co., Fall River, Mass.

CHINA CLAY
Miner Edgar Co., Brooklyn, N. Y.
Morey & Company, Boston, Mass.

CIRCUIT BREAKERS
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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Buffalo Forge Co., Buffalo, N. Y.
Garland Co., Bay City, Mich.

CORDAGE
Columbian Rope Co., Auburn, N. Y.

COUPLINGS
(Flexible)
General Electric Co., Schenectady, N. Y.

CUTTERS
Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.

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Black-Clawson Co., Hamilton, O.
Cheney Bigelow Wire Wks., Springfield, Mass.
Dilts Machine Works, Inc., Fulton, N. Y.
Eastwood Wire Mfg. Co., Belleville, N. J.
Improved Paper Machinery Co., Nashua, N. H.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

CYLINDER WIRES
Appleton Wire Works, Appleton, Wis.

DAMS AND RESERVOIRS
Field, William T., Watertown, N. Y.

DANDY ROLLS
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cheney Bigelow Wire Wks., Springfield, Mass.

DECKLE WEBBING
Morey & Company, Boston, Mass.

DIAPHRABMS
Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.

DIGESTERS
International Process Co., New York.
Swenson Evaporator Co., Chicago, Ill.

DIGESTER LININGS
Preston's Digester Lining Co., Ltd., Radcliffe, England.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

DRAINER BOTTOMS
Snell, Samuel, Company, Holyoke, Mass.

DRYER FELTS
Fitchburg Duck Mills, Fitchburg, Mass.
Morey & Company, Boston, Mass.

DRYING MACHINES
Buffalo Forge Co., Buffalo, N. Y.

DUSTERS
Noble & Wood Machine Co., Hoosick Falls, N. Y.

DYESTUFFS
Farbwerke-Hoechst Co., New York.
Heller & Merz Co., New York.
Klipstein & Co., A., New York.

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Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC MOTORS
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

ELECTRIC TRANSFORMERS
General Electric Co., Schenectady, N. Y.

ELEVATORS
(Portable)
Economy Eng. Co., Chicago, Ill.

ENCLOSED ARC LAMPS
General Electric Co., Schenectady, N. Y.

ENGINEERS
Barker, E. R., Boston, Mass.
Buss, Edward A., Boston, Mass.
Carey, James L., Chicago, Ill.
Field, William T., Watertown, N. Y.
Little, Arthur D., Boston, Mass.
Scott & Co., Ernest, Fall River, Mass.
Smith, F. L., New York.
Wallace & Co., Joseph H., New York and Montreal, Quebec, Can.

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Buffalo Forge Co., Buffalo, N. Y.
Westinghouse Machine Co., E. Pittsburgh, Pa.

EVAPORATORS
International Process Co., New York.
Scott & Co., Ernest, Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.

FANS
(Exhaust)
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

FASTENERS
(For Screen Plates)
Hardy & Sons Co., Wm. A., Fitchburg, Mass.

FEED WATER PURIFIERS
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

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Appleton Woolen Mills, Appleton, Wis.
Bulkley, Dunton & Co., New York.
Castle, Gottheil & Overton, New York.
Heimbach, Thomas Josef, Ltd., Düren, Rheinland, Germany.
Huyck & Sons, F. C., Albany, N. Y.
Lockport Felt Co., Lockport, N. Y.
Morey & Co., Boston, Mass.
Orr Felt & Blanket Co., Piqua, O.
Shuler & Benninghofen, Hamilton, O.
Waterbury Felt Co., Skaneateles Falls, N. Y.

FILTERS
Hungerford & Terry, Inc., Philadelphia, Pa.
Norwood Eng. Co., Florence, Mass.
Scaife & Sons Co., Wm. L., Pittsburgh, Pa.

FILTERING SYSTEMS
Improved Paper Machinery Co., Nashua, N. H.

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Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm., Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks., Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
Gleeson, Thomas E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wilkinson Bros. & Co., Inc., New York.

FURNACES

Swenson Evaporator Co., Chicago, Ill.

GEARS

General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Wieckert, E. F., Neenah, Wis.

GENERATORS AND MOTORS

General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GRINDERS

Appleton Machine Co., Appleton, Wis.
Blackhall Mfg. Co., Buffalo, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Voith, J. M., 200 Fifth Ave., New York.

GROUNDWOOD PULP

Andersen & Co., J., New York.
Domestic Mills Paper Company, New York.
Parsons Trading Co., New York.
Rantoul Co., C. W., New York.
Riordon Pulp & Paper Co., Ltd., Montreal, Quebec, Can.
Union Bag & Paper Co., New York.

GUMMED TAPE

Fox Paper Company, Lockland, O.

HOSE

Boston Belting Co., Boston, Mass.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Phila., Pa.
Rossendale-Reddaway Belting & Hose Co., Newark, N. J.

HYDROELECTRIC PLANTS

Field, William T., Watertown, N. Y.

JORDAN ENGINES

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

JORDAN LININGS

Bahr Bros. Mfg. Co., Marion, Ind.

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Blackhall Mfg. Co., Buffalo, N. Y.

KNIVES

Dilts Machine Works, Inc., Fulton, N. Y.
L. & I. J. White Company, Buffalo, N. Y.

KRAFT PAPER

Berlin Mills Co., Portland, Me.
Fox Paper Co., Lockland, O.
Rantoul Co., C. W., New York.

KRAFT SODA PULP

Andersen & Co., J., New York.
Berlin Mills Co., Portland, Me.
Parsons Trading Co., New York.
Price & Pierce, Ltd., New York.
Salomon, Felix & Co., New York.
Scandinavian-American Trading Co., New York.

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Preston's Digester Lining Co., Ltd., Radcliffe, England.

LUMB GOVERNORS

International Process Co., New York.

LUMBER

Riordon Paper Co., Montreal, Quebec, Can.

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Field, William T., Watertown, N. Y.

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Glens Falls Machine Works, Glen Falls, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Improved Paper Machinery Co., Nashua, N. H.
International Process Co., New York.
Jones & Sons Co., E. D., Pittsfield, Mass.
Lockport Machine Co., Lockport, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Norwood Eng. Co., Florence, Mass.
Pusey & Jones Co., Wilmington, Del.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.
Ticonderoga Machine Wks., Ticonderoga, N.Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

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PAPER EXPORTERS

Berlin Mills Co., Portland, Me.
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Fox Paper Company, Lockland, O.
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Castle, Gottheil & Overton, New York.
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Craig & Co., H. G., New York.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Eastern Mfg. Co., New York.
Fox Paper Co., Lockland, O.
Hammermill Paper Co., Erie, Pa.
Monarch Paper Company, Kalamazoo, Mich.
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Williams, F. M., Watertown, N. Y.

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Glens Falls Machine Works, Glens Falls, N. Y.

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Buffalo Forge Co., Buffalo, N. Y.
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Farrell Foundry & Machine Co., Ansonia, Conn.
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SCALES

Howe Scale Co., New York.

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Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
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Union Screen Plate Co., Fitchburg, Mass.

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Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

SPIRAL PIPE

American Spiral Pipe Works, New York.

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Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
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Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

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Union Sulphur Co., New York.

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Valley Iron Works Co., Appleton, Wis.

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Howe Scale Co., New York.

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General Electric Co., Schenectady, N. Y.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Machine Co., E. Pittsburgh, Pa.

TWINES

Columbian Rope Co., Auburn, N. Y.

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St. Regis Paper Co., Watertown, N. Y.

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Heller & Merz Co., New York.

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Perkins, B. F., & Son, Inc., Holyoke, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WATER-COOLING TOWERS

Wheeler Mfg. Co., C. H., Philadelphia, Pa.

WATER FILTERS

Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS

Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER WHEELS

Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
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(Arc)

General Electric Co., Schenectady, N. Y.

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Black-Clawson Co., Hamilton, O.
Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES

Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Cheney Bigelow Wire Wks, Springfield, Mass.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wisconsin Wire Wks., Appleton, Wis.

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Carbolineum Wood Preserving Co., Milwaukee, Wis.

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Andersen & Co., J., New York.
Atterbury, Bros., Inc., New York.
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WIRE M'F'G CO.
FOURDRINIER WIRES
BELLEVILLE, NEW JERSEY. U.S.A.

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Vol. XVIII
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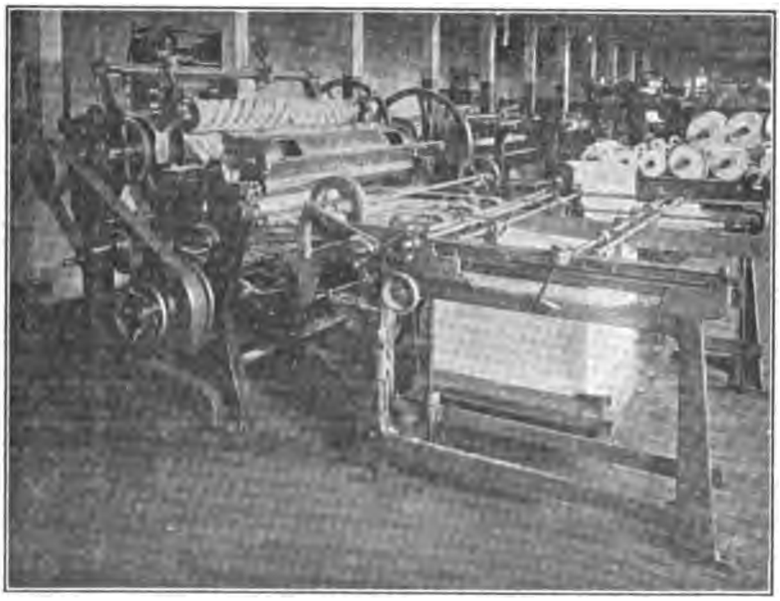

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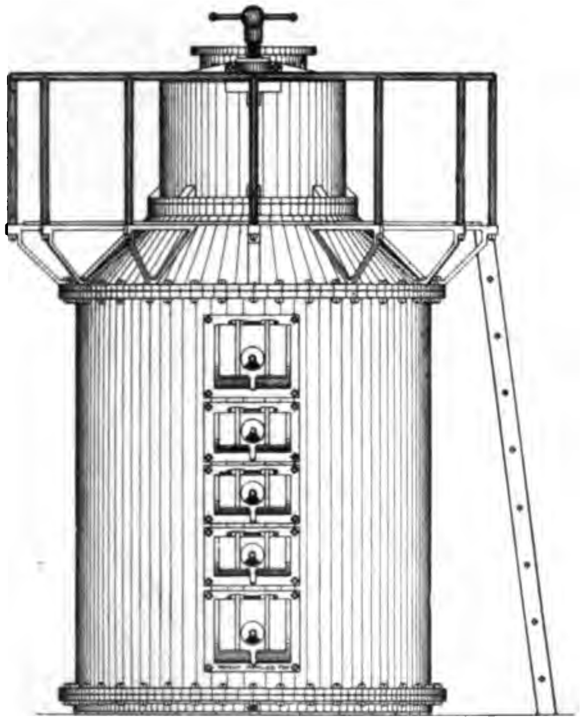

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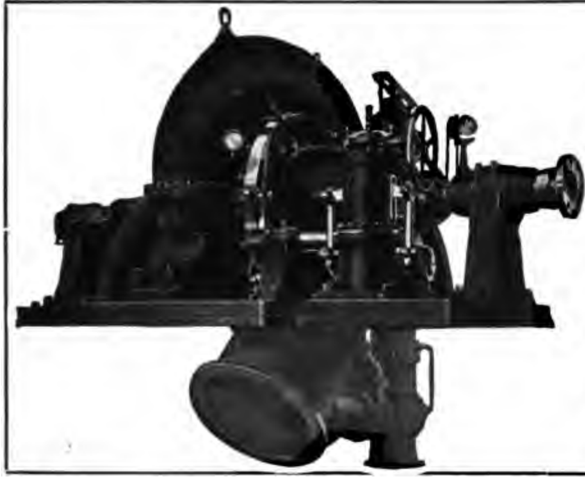

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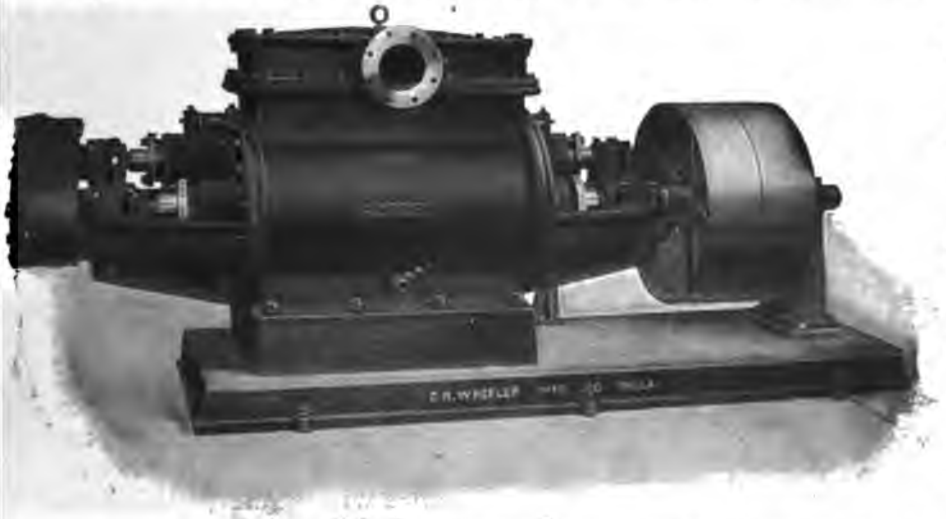

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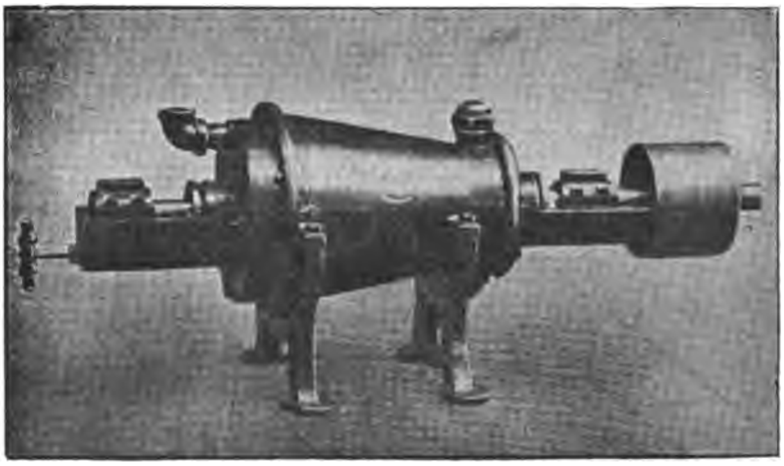

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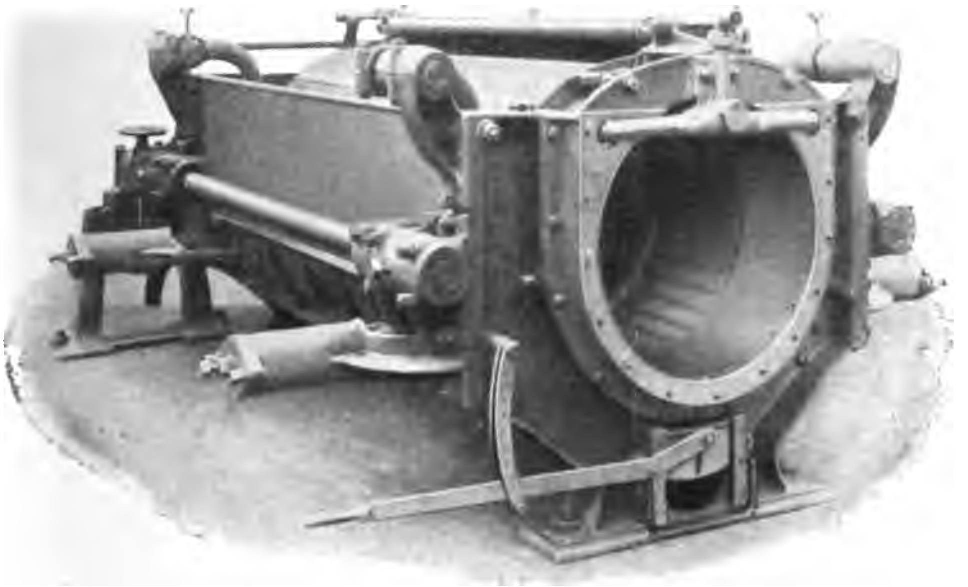

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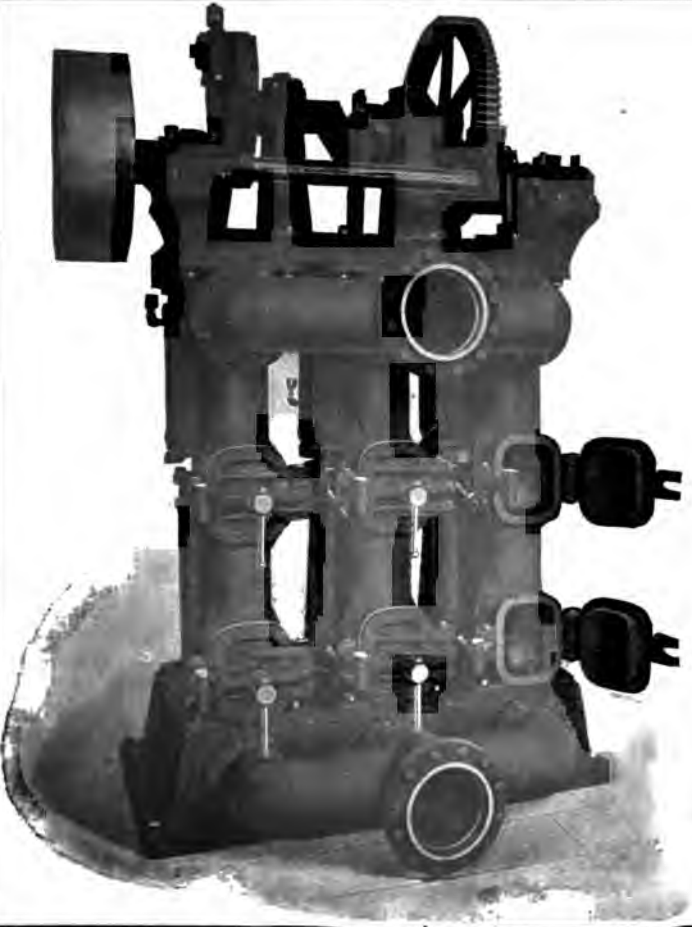

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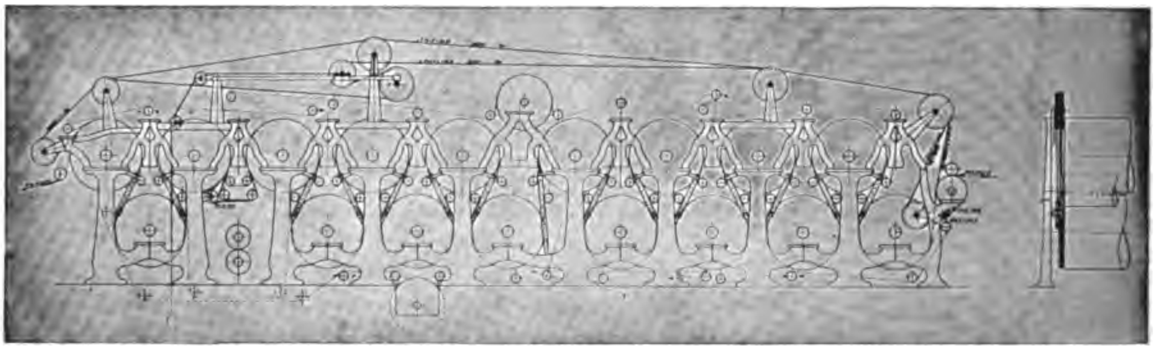

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Vol. XVII NOVEMBER 10, 1915 No. 9

A Beating Test for Papermaking Fibers

By E. SUTERMEISTER

It is the almost daily experience of papermakers that when they have to change the kind of fiber used in their beater furnishes the quality of the paper varies, and this, even with the greatest possible care in selecting fibers which appear to be of the same grade so far as strength and hardness are concerned. Even when the papermaker manufactures his own fibrous stock there are times when all ordinary precautions fail to eliminate changes in the wood or the liquor used and the result is again a variation in the final product. Evidently then, it is desirable to have some means of testing the fiber to see what strength it will develop when beaten, since a satisfactory test of this nature would enable one to produce a uniform blending of several kinds of fiber, or would give a method of control which should permit the pulp mill to produce a standard product or at least to separate an uneven product into a number of standard grades. Such a test has been worked out and has been in satisfactory use for a considerable period.

In looking over the problem it was evident that any apparatus used must be capable of sufficiently accurate control so that the exact conditions of the test could be duplicated at any time, and also that it must give the results on comparatively small samples of pulp. These considerations eliminated the miniature beating engines, since experience had proved that with them standard conditions of beating could not be maintained. In searching for a substitute, attention was directed to the type of operation of the pebble mill and a "Little Trojan" mill, manufactured by the Abbé Engineering Company, was obtained for trial. This mill consists of a porcelain jar of a capacity of 1,387 gallon, holding a charge of 10.8 ℔ of flint pebbles, and mounted on a frame which is revolved at a speed of sixty revolutions a minute. Preliminary work in this mill was carried on by breaking up weighed samples of fiber with water, beating them for different periods of time and examining them under the microscope. In some cases they were made up into hand mould sheets and tested for strength after air drying. Microscopic examination revealed the following:

Am't of Fiber in Grammes	*Time Beaten in Hours*	*Effect*
50	1	Scarcely noticeable.
50	2	Some ends mashed.
25	1	Not very noticeable.
25	2	A good many fibers broken up and mashed at ends.

While the microscope failed to show marked differences it was quite otherwise with the sheets made up on the hand mould and air dried. The observations on these are as follows,—strength tests being made on the Mullen tester:

Amount of Stock in Grammes	*Beating Hours*	*Strength Pounds*	*Percent Shrinkage*	*Character of Sheets*
50	..	7	..	Very soft.
50	1	25.3	2.5	Pliable, good rattle, no wrinkles.
50	2	60.0	7.5	Tough, wrinkled.
25	2	..	17.0	Very tough and wrinkled.

As it was evident that an hour's beating of 50 grammes of fiber gave sufficient strength for an accurate test, and that the sheets from such stock were of a character to be handled easily while those from stock beaten longer were too uneven and wrinkled, the standard method finally adopted was as follows:

NOTE—the author of this admirable paper, which deals with new work and represents a long and valuable research, is chief chemist to S. D. Warren & Co., Cumberland Mills, Me. He is a member of the Committee on Soda Pulp of the Technical Section, American Paper and Pulp Association.

The fiber to be tested is spread out and allowed to become thoroughly air dried and two 50-gramme samples are then weighed out. One of these samples is soaked in 1,000 Cc. of water and reduced to pulp by rubbing between the hands. It is then transferred to the pebble mill and all fiber rinsed in with a second 1,000 Cc. of water. The mill is then closed and revolved exactly one hour at sixty revolutions a minute, at the end of which time the entire contents of the mill are emptied upon a ½-inch mesh sieve and the pulp washed off the pebbles into a pan beneath the sieve. The pan is then filled to a definite mark with water—the entire contents occupying a volume of 27 liters and the depth of stock being 5¼ inches—and four sheets made up on a hand mould of the dimensions, 5½ in x 10 in. inside the deckel. In making these sheets two dips are taken for each one, the hand mould being reversed in direction on the second dip in order to obtain a uniform sheet. The sheets are couched on small felts, pressed in a copying press and spread on racks to become air dry. When dry they are pressed for a short time to remove wrinkles and each sheet is then cut diagonally and tested for strength at five points along this diagonal. The average of the twenty tests is then taken as indicating the beaten strength of the sample in question. If it is desired to compare the strength before and after beating the second 50-gramme sample may be broken up to a uniform pulp, as in the first case, and made up into sheets from the same volume but without any treatment in the pebble mill. After air drying these are tested in the same way as the others.

Work on these unbeaten sheets proved that the ordinary rubber diaphragm supplied with the Mullen tester was too heavy to give accurate results with such weak sheets as the unbeaten fibers produced. When a very thin diaphragm of dental rubber was used much better results were obtained but as this was not very durable and necessitated frequent changes the Ashcroft testers were tried out and found to give satisfaction. They were therefore adopted—an 0 to 20℔ instrument for unbeaten sheets and an 0 to 140℔ tester for most of the beaten pulps.

To indicate what may be expected of duplicate results on the same sample of fiber there are given below five pairs of tests on unbleached fibers.

	Strength of Beaten Fibers	
Fiber	*Test* 1	*Test* 2
Domestic No. 1	39.8	38.0
Domestic No. 2	29.5	28.6
Domestic No. 3	23.4	21.1
Foreign No. 1	16.0	12.7
Foreign No. 2	20.0	19.5

From these and other tests it has been determined that the probable maximum error in strength tests of beaten sheets is plus or minus 7.6 percent, but the variation from the average is usually considerably less than this. In working with unbeaten sheets the percentage variation from the average is much greater because of the low strength of the sheets. While a variation of this magnitude may appear serious it must be remembered that it is usually only necessary to classify fibers into rather broad groups and for this purpose the test serves admirably.

During the working out of this test it became necessary to investigate many of the factors which might possibly influence its results, among these were the time of beating, the temperature of the stock during beating, the effect of drying the fiber before beating, the relation between thickness of sheet and strength, etc., as well as several subsidiary problems. Many of these throw much light on the precautions necessary in making the test and are therefore worthy of consideration.

EFFECT OF TEMPERATURE DURING BEATING

As the temperature of any available water supply generally varies quite widely between summer and winter it was essential to see whether such variations caused any appreciable differences in the tests. To make the tests entirely conclusive the temperature during the beating of one sample was maintained at a much higher point than would be attained by any water supply. Two samples of fiber were beaten at room temperature and again at a much higher average temperature; they were then made into sheets and tested in exactly the same way, with the following results:

	Dry Fiber		*Wet Fiber*	
Average temperature of beating, degrees C	66.7	18.4	62.0	26.0
Strength of beaten fiber	26.4	29.3	59.2	66.0

It is apparent that the higher temperatures give somewhat lower results and it is desirable to reduce temperature changes as much as may be done without unduly complicating the routine procedure. It seems safe to assume that tests made at room temperatures the year round will not vary appreciably from this cause.

EFFECT OF ATMOSPHERIC HUMIDITY ON ASHCROFT TESTER

It is a well known fact that changes in the relative humidity of the atmosphere cause very noticeable physical changes in paper and it was suspected that it might be necessary to make all tests at a definite and constant humidity in order to get results which would be strictly comparable. To verify this theory hand mould sheets of three kinds of fiber were tested at varying humidities, the sheets being exposed in each case long enough to insure their being in equilibrium with the surrounding atmosphere. They were finally dried bone dry, stored in a desiccator, removed one at a time and tested as rapidly as possible; this being recorded as the result at 0 percent humidity. This is not strictly true as bone-dry fiber absorbs moisture with such great rapidity that before the test could be completed there was undoubtedly a considerable divergence from the absolutely dry condition, but it was the best that could be done with available equipment. The accompanying table gives the results of the tests on the three fibers:

Relative Humidity at Time of Testing	*Ashcroft Test on Beaten Fibers*		
Percent	*Sample* 1	*Sample* 2	*Sample* 3
0.0	26.9	25.6	43.8
32.0	..	25.9	49.8
44.0	32.1	24.4	48.8
71.0	..	19.5	44.4
75.0	29.0	..	..
91.7	22.2	..	..

It appears from these tests that the maximum strength as shown by the Ashcroft tester is developed as some point between 30 and 50 percent relative humidity, and that higher or lower humidities will decrease the strength slightly. It is probable that the point of maximal strength would be different for different fibers. The table also proves that quite wide variations in atmospheric humidity will cause comparatively small changes in the figures for bursting strength so that under all ordinary conditions this factor may be neglected in routine work. It would, however, be well to make sure that the humidity does not rise above 70 percent while the sheets are seasoning, or being tested, and for the most accurate comparisons it would be best to test the sheets at a constant humidity.

EFFECT OF MOISTURE IN THE FIBER

Dry fiber as received at the mill varies from 75 percent to 92 percent bone dry, while the wet lap stock contains about 65-70 percent of moisture. As already outlined the general procedure for routine tests is to spread the fiber out and allow it to become thoroughly air dry before taking the samples for beating, but while this gives a good basis for comparison, it was felt that it did not necessarily indicate the true condition of the fiber when used in the mill. It was also desired to know whether such variations in the moisture content of the fiber as could be caused by differences in atmospheric humidity would be of sufficient magnitude to cause appreciable errors in the results.

The first test was made on samples cut from two lots of rather moist domestic roll fiber. The moisture in the samples was determined and tests were made of the fiber as cut (a) and again after air drying (b).

	Domestic No. 1					
	Roll 1		*Roll 2*		*Roll 3*	
	a	*b*	*a*	*b*	*a*	*b*
Percentage moisture	16.3	..	20.0	6.4	10.0	6.6
Unbeaten test	4.1	4.0	12.3	8.3	8.3	6.8
Beaten test	17.4	17.4	31.8	29.6	30.7	26.6
	Domestic No. 2					
Percentage moisture	19.0	..	26.3	5.7	22.4	7.5
Unbeaten test	14.1	7.7	19.9	16.3	15.3	14.2
Beaten test	38.1	26.9	47.8	42.0	43.6	36.2

This proves conclusively that fiber which has been run over the drying cylinders till it contains 10 to 25 percent of moisture does undergo a further change on being allowed to air dry. Unfortunately this change does not appear to be proportional to the moisture lost in air drying or to that present in the fiber when first sampled, so that it is impossible to employ a factor and calculate the strength at one moisture condition from that determined at another.

Since this test showed such a difference in fiber which had already passed over the steam driers it was thought best to see what influence drying had on pulps ordinarily received in the wet state. Tests were therefore made on three samples of sulphite—first, as received; second, after air drying, and third, after being dried on the drying cylinders of a paper machine. The moisture was determined in each case, except the steam dried, in order that the samples to be beaten might contain the same weight of air-dried fiber. As the steam-dried sample had been exposed to the same atmospheric conditions as the air-dried lot, it was assumed to contain the same moisture.

The results of tests on these samples are:

	Wet		*Air Dried*		*Steam Dried*	
Fiber	*Unb'tn*	*Beaten*	*Unb'tn*	*Beaten*	*Unb'tn*	*Beaten*
Unbleached A	45.3	62.8	18.6	46.1	9.7	37.7
Unbleached B	46.8	74.1	22.1	56.1	10.0	44.8
Bleached	38.5	67.3	15.1	51.7	8.6	38.5

The change which takes place on drying wet fiber is evidently one of considerable magnitude and that it is dependent on the degree or kind of drying is readily seen by the differences in the figures. They do not show, however, whether the rate of change is uniform throughout the range of drying or whether it is very slight until a considerable amount of moisture is lost and then becomes more rapid. As this point is an important one in considering the selection of samples for testing, it was attempted to settle it by taking samples of a wet fiber, allowing them to dry out gradually and testing them at various intervals from very wet to bone dry. In order to prevent any radical changes in the fibers on the surface, the samples were kept in cans in which the circulation of air was very slow, so that the transfer of moisture from the fiber to the air should be no more rapid than that from the inside to the outside of the samples.

The samples were made into unbeaten and beaten sheets in the original condition; when one-third of the moisture was gone; when two-thirds had evaporated; when air dry, and finally after bone drying. The figures obtained are shown in the accompanying table and also graphically in Chart 1.

		Strength, Ashcroft	
Condition	*Percent Moisture*	*Unbeaten*	*Beaten*
Wet	70.0	47.6	64.7
Two-thirds wet	60.8	39.9	58.8
One-third wet	43.8	32.7	60.6
Air dry	8.2	16.7	46.6
Bone dry	0.0	4.6	11.1

It is apparent from this test that the change in strength, both of the unbeaten and the beaten fiber, is continuous from the time it starts to dry out, but that the rate of change is not the same throughout, being greatest when the fiber contains less than 10 percent of moisture. This probably explains in part why wet lap stock, which has never been put over the drying cylinders, gives harder and stronger paper than fiber shipped in the dry condition. It also emphasizes the importance of care in selecting and storing the samples to be used for beating tests, and discloses a reason for some of the minor variations in testing air-dried fiber, since variations in atmospheric humidity would generally affect the moisture content between 5 percent and 12 percent, or just in that part where strength is most affected by slight variations in moisture. Doubtless more reliable and uniform results could be obtained by drying all samples of fiber to the same moisture content.

EFFECT OF TIME OF BEATING

It was shown in the preliminary work that the duration of the beating exerted a great influence on the strength of the sheets. This appeared so interesting and important that further tests were made on four different fibers, two bleached and two unbleached, beating each for one, two, four and six hours, making up the hand mould sheets and testing as usual. With the two bleached fibers the strength reached a maximum and then decreased as the beating progressed, while with the unbleached fibers the strength increased throughout the test. As the time of beating was increased the stock became more slimy and slow on the wire so that less fiber stayed on the hand mould to form the sheet, though the same amount of fiber was used each time and diluted to the same extent before making the sheets. This was so marked in the two bleached fibers that the weight of the sheets from the sample beaten six hours was only about half that of the same number of sheets from unbeaten fiber; the unbleached fibers showed the same tendency, but to a less extent. As this probably explained the decrease in strength on prolonged beating the experiment was repeated on two fibers, using to make up the sheets a filtering device which retained all the fiber added to it in a definite and uniform volume of stock. This apparatus gave well formed sheets of practically uniform weight, and tests on them proved the truth of the above theory and showed that the strength did not decrease when the beating was continued for six or eight hours. The results of these tests are contained in the following table in which are given the number of hours the sample was beaten in the pebble mill, the weight of ten sheets as prepared on the filter apparatus, the strength by the Ashcroft tester and the number of double folds indicated by the Schopper folding machine. The figures for the Ashcroft test are the averages of three tests on each of ten sheets; in the folding test one strip from each sheet was tested, except in the sample beaten one hour, in which case two strips from each sheet were tested:

BLEACHED SULPHITE (AIR DRIED SHEETS)

Hours beating	*Weight of sheets in grammes*	*Ashcroft test in lb.*	*Schopper Maximum*	*Folder (double folds) Minimum*	*Average*
0	10.05	11.2	0.0	0.0	0.0
1	10.91	38.1	105.9	12.8	34.1
2	10.46	56.8	756.0	86.6	307.5
4	9.63	82.6	1685.0	485.0	946.0
6	10.06	93.5	2662.0	1253.0	1892.1
8	10.48	104.9	2933.0	2125.0	2557.7

UNBLEACHED SULPHITE (AIR DRIED SHEETS)

Hours beating	*Weight of sheets in grammes*	*Ashcroft test in lb.*	*Schopper Maximum*	*Folder (double folds) Minimum*	*Average*
0	9.65	6.0	0.0	0.0	0.0
1	10.45	26.4	36.0	4.0	12.0
2	9.88	49.2	1125.0	92.0	257.0
4	9.50	80.0	1372.0	357.0	805.0
6	9.50	94.6	1540.0	472.0	995.0

UNBLEACHED SULPHITE (DRIED ON STEAM CYLINDER)

Hours beating	*Weight of sheets in grammes*	*Ashcroft test in lb.*	*Schopper Maximum*	*Folder (double folds) Minimum*	*Average*
0	9.62	5.0	0.0	0.0	0.0
1	10.30	18.8	18.0	1.0	7.0
2	9.70	32.6	528.0	37.0	171.0
4	9.48	55.3	462.0	276.0	369.0
6	9.60	65.4	613.0	130.0	325.0

The sheets which were dried on the steam heated cylinder were made out of the same lots of beaten fiber as those from which the air-dried sheets of unbleached sulphite were prepared.

These results are shown graphically in Charts 2 and 3. They prove conclusively that the bursting strength (Ashcroft), developed on beating in the pebble mill, keeps on increasing beyond the eight-hour period, and that if a diminution of strength finally occurs it is after far more treatment than the results of former tests of hand mould sheets would indicate. The difference in strength between the air dried and steam dried sheets is also particularly marked.

Considering the folding tests it is noticed that there is a marked difference in the form of the curves after the four-hour samples. This may be due to the greater variation in relative humidity during the testing of the bleached sulphite—since this test is particularly sensitive to changes in humidity—and for this reason the curves for the unbleached sulphite are considered to be more characteristic. The reduction in strength on steam drying is more noticeable by this test than by the Ashcroft test.

SHRINKAGE OF AIR-DRIED SHEETS

At an early stage of these tests it was observed that the air-dried sheets of beaten fibers exhibited a marked shrinkage when compared with the size of the hand mould and that the different makes of fiber showed this tendency to a very different extent. This is illustrated by the following table which gives a few measurements of various fibers, the shrinkage being expressed as the percentage of the length of the hand mould inside the deckels. The fibers were beaten either wet, *i. e.,* without previous air drying, or air-dried, and figures are also included for sheets of unbeaten pulp:

PERCENTAGE SHRINKAGE

Fiber	*Air Dry Unbeaten*	*Beaten*	*Wet Unbeaten*	*Beaten*
Dom., wet laps...	0.2—1.51	3.52—4.73	—	—
Domestic rolls...	0.1—1.10	2.31—3.82	—	—
Foreign No. 1...	0.1—0.40	2.11—2.82	—	—
Foreign No. 2...	0.1—0.40	2.32—2.82	—	—
Dom., bleached..	1.82—2.92	6.14—6.74	—	—
Mixed, bleached.	0.2—1.31	2.82—3.92	0.80—1.61	2.82—4.73

After a long series of tests on a great number of different fibers the shrinkage measurements as a routine test was abandoned because there appeared to be no constant relation between the strength of the beaten fibers and the shrinkage of the air-dried sheets. The various fibers fall naturally into certain groups according to this test, but the distinction between the groups is not very sharp. Quite probably when the beating test is further perfected and made more delicate the shrinkage measurements will be found to throw more light on the subject.

The amount of beating which the fiber receives has a great influence on the extent to which it will shrink on air drying. This is well illustrated in Chart 4, which shows the percentage shrinkage, based on the length of the hand mould, compared with the hours of beating in the pebble mill. The fibers marked A and B on this chart are unbleached, while C and D are bleached, C being a mixture of several kinds. Such enormous shrinkages as these show cannot of course take place when the beaten fiber is dried on a paper machine, since the felt holds it firmly against the dryer and does not permit such great changes in dimensions. Nevertheless the tendency is there and its restraint must set up stresses in the sheet which are quite probably responsible for some of its subsequent erratic actions. This should be an interesting and fruitful field of investigation.

HYDRATION OF BEATEN FIBER

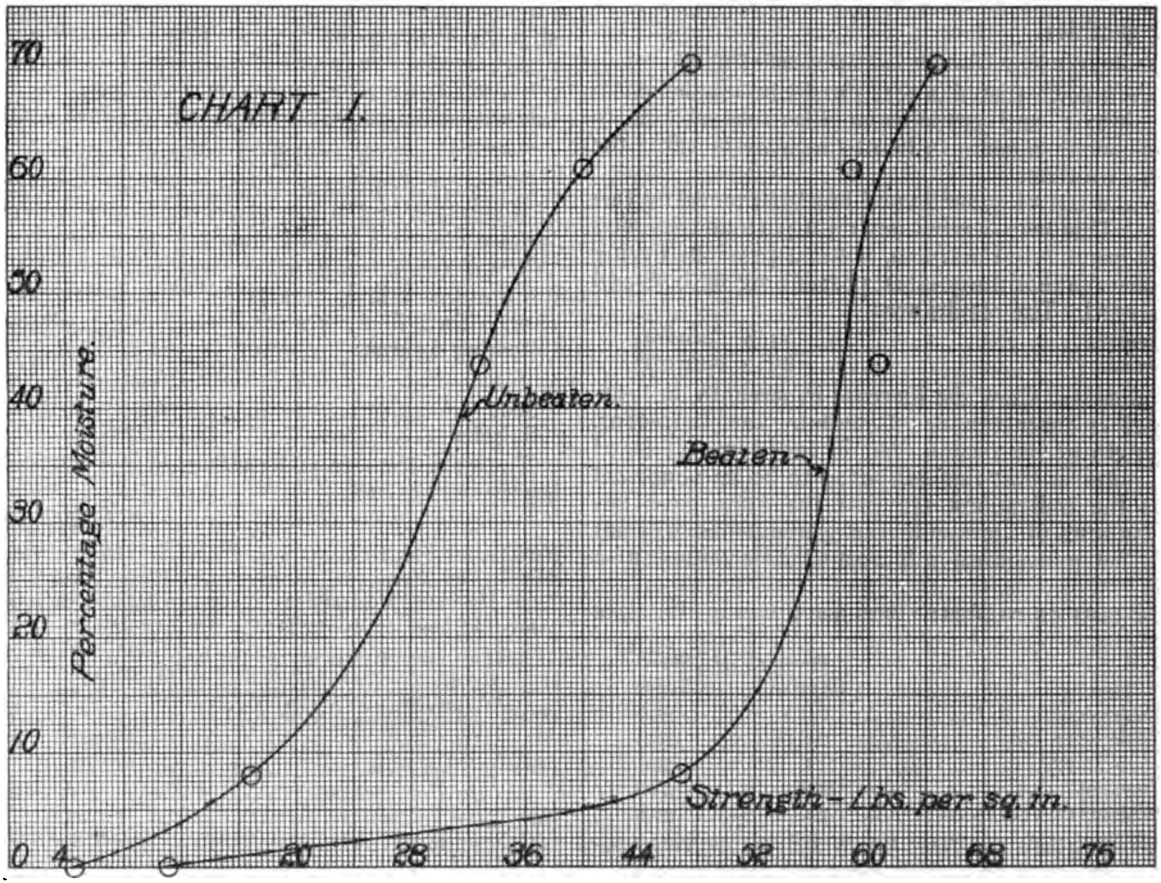
The change which fiber undergoes on long beating, in virtue of which it is spoken of as greasy, slimy, etc., is frequently considered as one of hydration, or the combination of water with the cellulose. As the work carried on to show the influence of time of beating supplied fibers all the way from the raw state to those which were practically parchmentized it was thought that moisture tests of the various sheets might throw some light on the subject. The papers were exposed to the air over night and samples then taken for moisture determinations; in this way it was considered that all had an equally good chance to absorb moisture and that all must be in equilibrium with the same atmospheric conditions. The following table gives the figures from the hand mould sheets of four different fibers:

Hours Beating in Pebble Mill	*Percentage Moisture in Air Dried Fiber* 1	2	3	4
0	5.2	6.3	6.3	7.7
1	5.4	6.6	6.5	7.1
2	..	6.0	4.3	7.5
4	5.6	6.7	4.7	7.6
6	..	6.6	6.9	8.9

While there is apparently a slight increase in the moisture content of the fibers beaten for six hours over the unbeaten fiber, yet the intermediate samples do not show that it is a definite progressive change, and on the whole the investigation does not tend to strengthen the hydration theory. It is at least evident that any possible hydration is so slight that a moisture test cannot be used to throw any light on the amount of beating the stock has received.

EFFECT OF BLEACHING AND OTHER CHEMICAL TREATMENTS

Since a large part of the commercial sulphite fiber is purchased in the dry condition in bales or rolls, and since it has been shown that drying out to this extent greatly reduces the beaten strength it was naturally desired to see if some means could be devised for bringing back the dried fiber to the same strength which it had in its original wet condition.



Experimental work along this line was carried out on an unbleached domestic fiber which had a beaten strength when tested in the wet condition of 64.8 pounds, and when tested after air drying of 46.6 pounds. Tests were carried out on air dry samples which were so weighed as to contain 45 grammes of bone-dry fiber. The samples after undergoing the treatments were beaten in the pebble mill without drying out, so that it could be seen how nearly the treatment brought the fiber back to its original wet condition. The nature of the treatment and the strength of the beaten fiber are given below:

Nature of Treatment	*Strength, Beating*
Original fiber with 70 percent moisture, untreated	64.8
Original fiber when air dried	46.6
Boiled in water for two hours	49.6
Boiled in caustic soda (20 grammes per litre) for 2 hours	20.3
Boiled in caustic soda (1 gramme per litre) for 1 1-3 hours	45.3
Boiled in salt solution (50 grammes Na Cl per litre) for 1 hour	47.0
Boiled in acid (1 gramme H Cl per litre) for 2 hours	34.6
Boiled in alum solution (10 grammes per litre), for 1 hours	44.7
Soaking in water at room temperature 6 days	54.0
Soaking in water at room temperature 27 days	52.1

The only one of these procedures which notably improves the strength of the air dry fiber is soaking in water at room temperature and this does not bring it anywhere near the strength of the original wet fiber. Neither does it appear to be a progressive action, as twenty-seven days' soaking gives no better results than six days.

The effect of bleaching on the strength of the fiber is shown in the accompanying table, which gives the condition of the samples when weighed out for testing and the strength tests on the unbeaten and beaten fibers both before and after bleaching:

	Unbleached		*Bleached*	
	Air Dry	*Wet*	*Air Dry*	*Wet*
DOMESTIC DRY ROLLS				
Unbeaten	4.6	..	9.7	13.8
Beaten	26.4	..	31.1	36.6
DOMESTIC WET LAPS, NO. 1				
Unbeaten	..	44.6	..	37.8
Beaten	..	61.2	..	62.0
DOMESTIC WET LAPS, NO 2				
Unbeaten	..	46.6	..	44.7
Beaten	..	54.9	..	60.2

	Unblcached	*Bleached*	
	Air Dry	*Air Dry*	*Wet*
FOREIGN DRY BALES, NO. 1			
Unbeaten	4.7	10.1	14.2
Beaten	26.0	30.0	39.4
FOREIGN DRY BALES, NO. 2			
Unbeaten	6.5	4.5	..
Beaten	28.8	24.6	..

Two of these dry fibers, the domestic rolls and the foreign No. 1, when bleached and beaten in the wet condition, show a very marked increase in strength over the unbleached dry fiber. The third dry fiber was not tested wet after bleaching. It would appear from this that bleaching is the most efficient treatment so far tried for bringing the strength of dried fiber back to that of the original wet fiber.

From the tests on the two wet fibers it is seen that bleaching has no tendency to reduce the strength of the fibers as indicated by the Ashcroft test. This is in sharp contrast to the work of Frohberg* who tested eleven fibers, before and after bleaching, for breaking length and folding strength and found in every case a very marked decrease caused by bleaching. Probably this difference is to be explained by the nature of the tests applied as it is well known that a high bursting strength does not necessarily imply good folding or tearing qualities.

SODA, SULPHATE AND GROUNDWOOD FIBERS

It would seem that this test should be applicable to soda, sulphate, and groundwood fibers as well as to sulphite, but is appears to be of much more value for the latter product.

Only one test of groundwood has been made by this method. This was carried out on a particularly good lot, well ground and uniform, without previous drying of the fiber, so that the greatest possible strength should be developed. The results are:

Unbeaten	4.7 lb. Ashcroft
Beaten	8.8 lb. Ashcroft

This does not show the increase in strength on beating which is characteristic of sulphite, and, moreover, the strength of the beaten fiber is very low. It is, of course, possible that this happened to be an abnormal lot, but the indications are that the differences between the tests of various lots of groundwood will not be such that an accurate judgment of their value can be formed.

A few tests on sulphate fibers are given in the table below:

	Strength of Fiber	
Fiber	*Unbeaten*	*Beaten*
No. 1 unbleached	12.0	35.6
No. 2 unbleached	10.2	33.9
No. 3 unbleached	14.1	39.5
No. 3 bleached	22.8	39.9
No. 4 unbleached	17.4	44.4

The beaten tests on these fibers fall rather close together, which may be a coincidence or may mean that sulphate fibers do not show such differences as do sulphites; further experimentation is necessary to settle this point. The strength developed is, however, sufficiently great to permit variations of considerable magnitude, and it is confidently expected that marked differences will be brought out when a sufficient number of samples have been tested. It is anticipated that this method of testing will prove as valuable for sulphate as for sulphite fibers.

Soda fiber, at least that prepared from poplar, seems to be more nearly like groundwood in its relation to the beating test. A few results taken at random from a series of experimental cooks where all conditions were accurately controlled, are given in the accompanying table.

While these fibers do show differences they are not at all such as would be expected from the wide variations in the cooking conditions. This is particularly true of the air-dry fiber, which is the condition in which it is most convenient to handle the samples for testing. From this it would be concluded that the method would not be of very great value as a control test in the manufacture of soda poplar fiber, though it might possibly prove applicable in the case of other broad-leaved woods. The first part of this judgment has been confirmed by a long series of tests on soda poplar fiber obtained daily during the regular running of a pulp mill; the differences were not great, nor did they appear to be characteristic or to bear any relationship to changes in the methods of cooking. Here again, confidence is felt that in the case of soda fiber prepared from pine, spruce or other coniferous wood, the test would prove as valuable as with sulphite.

Caustic Soda Used Percent On Dry Wood	*Hours Cooked*	*Strength Wet*	*When Beaten Air Dry*
20	7	35.1	24.7
25	3	37.9	24.8
25	7	42.8	28.3
34	1½	28.5	27.3
34	5	37.9	26.1

DUPLICATION OF APPARATUS

The pebble mill originally used was a standard piece of apparatus and it was expected that another of the same make and rating would give the same results. When the time came to increase the equipment by adding another mill it was found that such was not the case. Two fibers tested in the two mills gave the following figures:

Fiber	*Old Mill*	*New Mill*
Soda	32.8	13.2
Sulphite	47.1	25.4

The data for size and charges of the two mills during these tests are:

	Old Mill	*New Mill*
Number of Stones	175	176
Weight of Stones	4,900 Gm.	4,900 Gm.
Total Volume to Shoulder	4,915 Cc.	4,320 Cc.
Voids to Shoulder When Stones Are In	2,930 Cc.	2,370 Cc.

After considerable experimentation the correct charges to obtain the same results in the two mills were worked out as follows:

	Old Mill	*New Mill*
Air-dry Fiber to Use	50 Gm.	42 Gm.
Water to Use	2,000 Cc.	1,680 Cc.
Number of Stones	175	155
Weight of Stones	4,900 Gm.	4,310 Gm.

When beaten in this way and made into sheets from volumes proportional to the weights of fiber used the following results were obtained:

Fiber	*Old Mill*	*New Mill*
Mixed Bleached Sulphite	41.3	42.0
Bleached Sulphite, Wet Laps	63.4	64.3
Domestic Rolls, Unbleached	18.4	20.3
Foreign Unbleached, No. 1	41.3	39.9
Foreign Unbleached, No. 2	33.0	30.2
Soda Poplar	25.2	24.5
Average	37.1	36.9

It is very evident from this that it must not be assumed that two mills of the same rating will beat the fiber in the same way, and that in order to produce comparable results the two mills must be carefully adjusted and tried out on a series of fibers covering the ordinary strengths tested.

CONCLUSIONS

This method of testing sulphite fiber is already of practical value, in at least two ways—it assists in

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Wochenblatt für Papierfabrikation, 44, 3599.

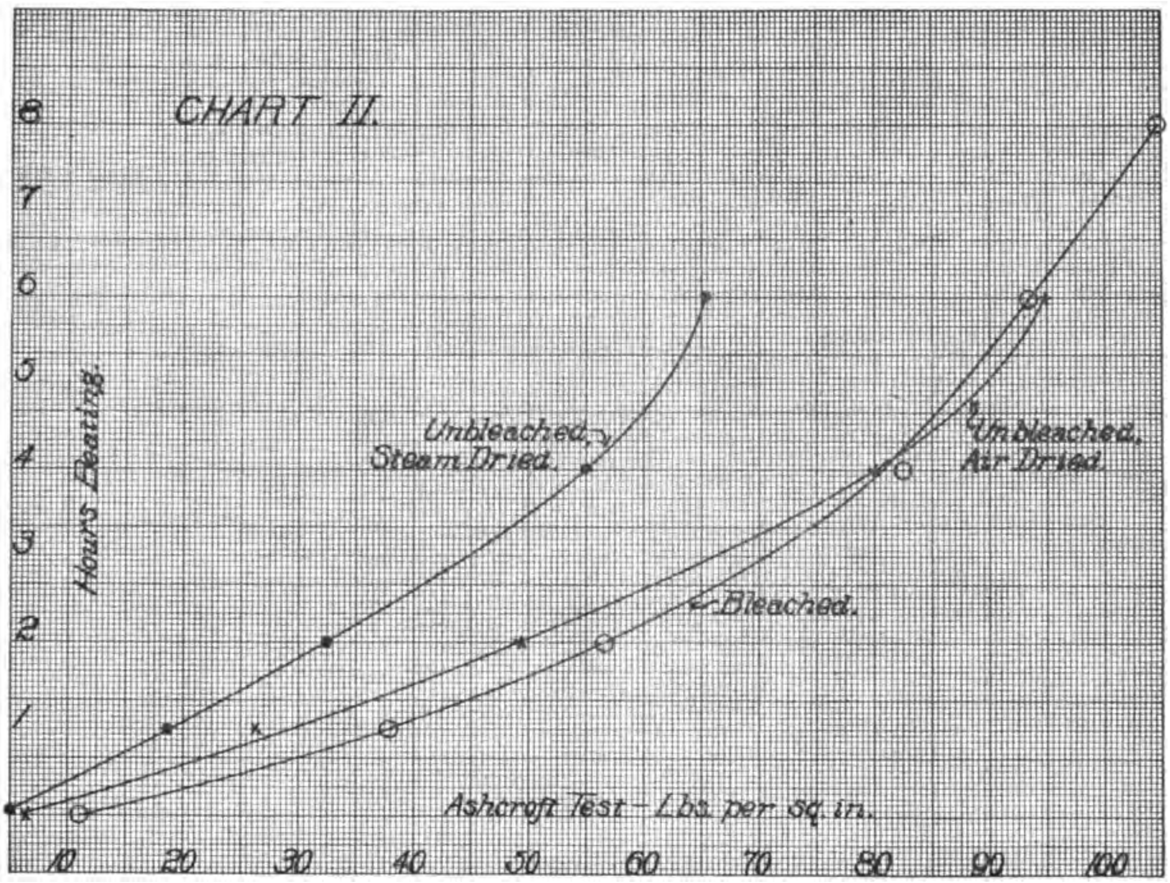


CHART II.

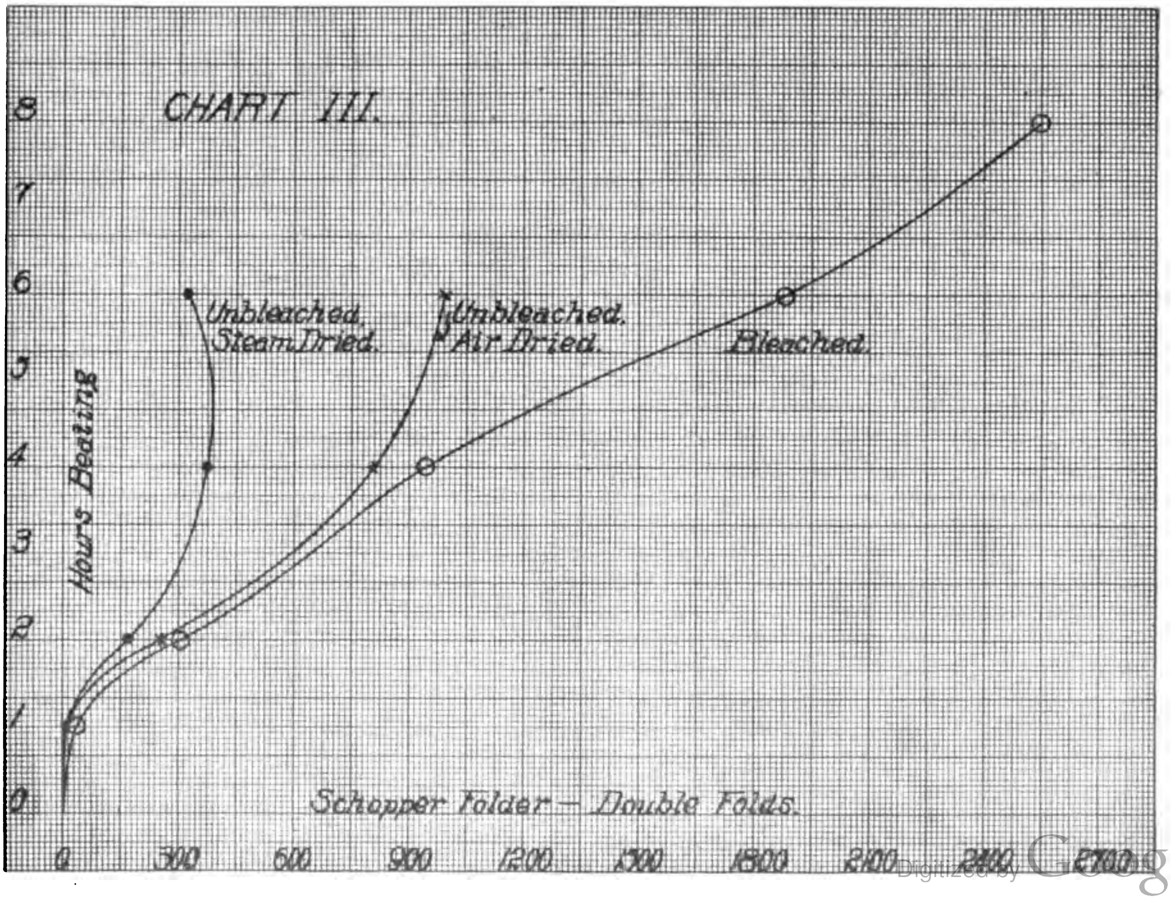


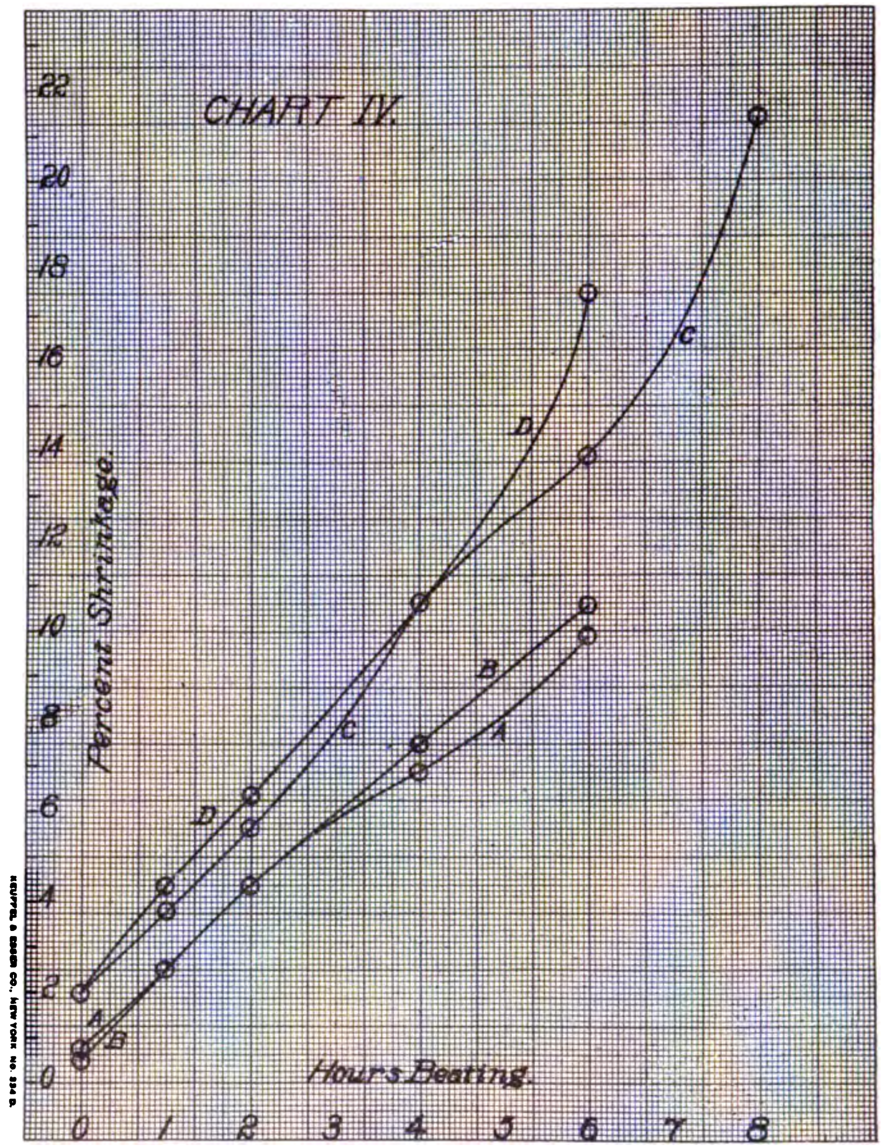
CHART III.

obtaining a mixture of fibers for bleaching such that the product will be of nearly constant strength, and it enables the cooking process in the sulphite mill to be so adjusted that the product is of much more uniform character.

It is of use in experimental work since it can be used on small quantities of fiber. This permits a more accurate grading of small samples of sulphite than can be made by tearing, feeling, etc., and also assists in the classification of the fiber obtained from small experimental cooks.

It has thrown light on the changes which take place during the storage of fiber and has shown why wet pulp gives stronger paper than the same fiber after it has been dried out.

For routine tests, such as the control of sulphite cooking operations the method as outlined is sufficiently accurate, but it is capable of considerable improvement, and if it is to be used in research work certain changes should be made. The most notable of these are: (1) The substitution for the hand mould of some type of sheet-making machine which will take a definite volume of a uniform mixture of fiber and water and hence will deliver a constant weight of sheet, and (2), the drying and testing of the fiber at constant humidity. This latter precaution should be extended to the drying of the samples before beating as ordinary air drying leaves them in just such a condition that a slight change in moisture content makes an appreciable difference in the strength test. Doubtless other improvements will be suggested as the use of the method is extended but the adoption of these two will certainly make it much more accurate.



British Paper Mills in War Time

PROBABLY never in the history of papermaking have British paper mills had to face to many difficulties as they are up against today, says our London contemporary, *The Paper-Maker and British Paper Trade Journal.* Scarcity of labor, increasing pulp prices, dear coal, extraordinarily high freights, insurances, and unparallelled delays, all combine to increase paper mill proprietors' and managers' anxieties, and many paper mills are not at all anxious to enter into contracts even at present prices for any long period ahead. Newspaper proprietors and publishers are themselves very hard hit, but it cannot be said that good "news" delivered at 1⅜d. net is an exorbitant figure today, everything considered. Certain consumers have taken large risks in the belief and the hope that the market would turn in their favor. They have been mistaken, and even at present prices many paper mills are actually losing money.

Fiber and Other Products of Waste Wood

Paper Pulp, Rosin, Turpentine and Pine Oil Recovered from Pinewood Stumps

AT the Seattle meeting of the American Chemical Society, August 31 to September 3, 1915, in a symposium on Forest Products, an interesting contribution on Waste Pine Wood Utilization was made by John E. Teeple. He pointed out that the industry is of great antiquity, "Noah's ark being 'pitched within and pitched without,' and the ark of bullrushes that supported the baby Moses was 'daubed with pitch.'"

The method of obtaining tar and charcoal commonly used in ancient days was to pile the wood in large heaps, cover it with earth, and by burning a portion of the wood accomplish a destructive distillation of the remainder. The products were tar and charcoal, although some few attempts were made to recover the volatile spirit for use as an illuminant.

Quoting from Mr. Teeple's paper, which is published in full in the November number of the *Journal of Industrial and Engineering Chemistry,* it is shown that about thirty years ago the use of iron retorts was introduced, and this made possible the recovery of an unsatisfactory turpentine, a little of the natural pine oils, and considerable tar oil, creosote oil, pitch and pyroligneous acid, in addition to tar and charcoal. The turpentine had a vicious odor, but being in small amount, it could usually be worked off by persuasion. Tar was a standard commodity, but the trade soon began to differentiate between this retort tar and ordinary kiln tar, and the purchaser demanded a reduction in the case of the former, or refused it. Charcoal could be sold for household fuel provided the plant was located in the neighborhood of a fair-sized city. Otherwise it was used to fire the retorts. Gas was also at a time recovered and burned under retorts. When pitch was not readily salable it could be dissolved in the tar oils or creosote oils and sold as tar, but these various light and heavy distillation oils accumulated, and, depending on his ingenuity, the manufacturer worked them up into paint oils, mixed paints, insecticides, disinfectants, fungicides, embalming fluids, medicinal products, and so on until the catalogue becomes alarmingly long.

This destructive distillation industry still exists. It is one of the two methods of treating wood to obtain Naval Stores that has been able to operate continuously under even the present very adverse conditions. Many improvements have been made in the type of the retort, in the regulation of heat, and in the separation and preparation of products for the market. In many cases the turpentine now obtained is of excellent odor and of surprisingly good quality, but its success has usually depended on the ability of the manufacturer to work up his oils into lines of specialties under carefully established trade names, and thus protect himself from too vigorous competition. He has improved his retort tar so that now it commonly commands the same price as kiln tar, and is sometimes quoted at a higher figure. With the present high prices ruling for acetate of lime, due to the strong demand for acetone, he is even proceeding in some instances to the manufacture of this product from his pyroligneous acid. A considerable part of these improvements has, of course, been due to chemists, but it must be admitted that a further very considerable part of the preparation of products for the market has been due rather to business men who are good observers but were not primarily trained as chemists. It seems to me that the destructive distillation of wood is wrong in principle, with our present knowledge of its composition, but at the same time the fact that some of these plants have been continuously operating for many years indicates that they are not to be abolished with the speed that advocates of some of the newer processes have assured us.

Of other processes that have been suggested—distillation with superheated steam, extraction with rosin bath or tar and pitch bath, distillation with water, distillation with hot gases, digestion with soda and application of vacuum have all had their trial in a commercial way, and a number of them have seemed to operate successfully for a while, due usually to special market conditions, but for the present these have all passed into history. It is very doubtful whether any of them will appear again, at least alone, even under improved conditions. . . .

The one other process which has apparently proved of value, and which is still in operation today under adverse market conditions in at least two or three plants, is that of extraction by means of a volatile solvent. This method was at one time very extensively employed, producing more Naval Stores from waste wood than all other systems combined. The amounts of turpentine and pine oil were large and of good quality, and one new product was added from the wood—rosin. This was ultimately refined to a grade approximately corresponding to F and G grades of gum rosin. At first, progress in marketing this was rather difficult, but the oils and tarry matters affecting its use were in part eliminated, and in part the customer was taught what changes were necessary in order to use it as satisfactorily as gum rosins, so that today again the demand exceeds the supply.

The worst feature, of course, in the development of this industry during the last few years has been the wide fluctuation in prices. In 1911 F rosin reached a high price of $8.45 by the barrel of 280 pounds, at Savannah: today it is $3.00—scarcely more than one-third of the high figure, and it has been lower. In 1911 turpentine reached a high price of $1.07 a gallon at Savannah: today it is 38c and has been lower. Most of these plants were built on the assumption that turpentine would not go below 50c a gallon, nor rosin below $5. These conditions were freely predicted at the time by people who had spent their lives in the Naval Stores industry, and so probably the chemist should not be blamed too much for the failure of processes to operate successfully at much lower figures, when he had based all his calculations on the higher figures and on the best judgment of people well informed as to conditions.

Now as to the failure of the industry: let us look first at the composition of the material with which we have to deal. Assuming that this is what we know as fat lightwood or as fat lightwood stumps, it contains rosin, turpentine, pine oil and the wood fiber. The problem is: In what way can all these products be extracted and placed on the market to bring the largest net amount to the manufacturer? In some places where the timber has been very largely the long-leaf pine, there is the additional factor of so locating his plant that he can entirely clear the land and largely enhance its value at the same time that he is furnishing his plant with raw material. In the future this will no doubt have an important bearing on the establishment of plants, but it will not be considered here. Suppose we have 5,000℔ of very rich, fat lightwood stumps. Suppose this contains 20 percent, or 1,000℔, of rosin; 40 gallons or 300℔ of turpentine and pine oil, and 15 percent, or 750℔, of water. This leaves nearly 3,000℔ of wood fiber. Now if we subject this 5,000℔ of fat lightwood to destructive distillation, no matter how carefully, we shall not get all the turpentine and we get only a small portion of the pine oil, before the rosin and the wood itself begin to decompose. The rosin would be valuable if we could get it, or its decomposition product, rosin oil. The pine oil would be valuable if we could get it, but before either the rosin oil or the pine oil leave the retort in any quantity they become thoroughly mixed with the tar and tar oils from the decomposition of the wood fiber, and there is no convenient way of ever separating them again in marketable conditions from the resulting mess.

If we investigate any of the other methods that have been discussed above, we find an important loss in some one or more of the products originally present in the wood. If we digest with soda there is a very fair recovery of the turpentine and a moderately good recovery of the pine oil, but the rosin and resinate are not in good marketable condition, and it would be very difficult to get them in any condition for anything but very special markets. On the other hand, if we use a volatile solution, properly selected and properly applied, we can recover nearly the whole of the rosin, turpentine and pine oil, and have left the wood fiber unchanged. The rosin, the turpentine and the pine oil will be in such condition that they can be made into the best grades it is possible to produce from wood. The wood fiber is free of rosin, and is in just the condition required for digestion to manufacture woodpulp. According to information and experiments it gives a good yield of a very strong-fibered pulp. Probably it will work up best into what is known as kraft pulp, or undercooked pulp, and this 3,000℔ of wood fiber remaining should furnish about 1,500℔ of good marketable pulp.

Our wood fiber has two disadvantages as a source of pulp. In the first place it cannot be entirely freed from the charcoal and charred and burned wood, and in the second place it will not be entirely free from bark, but there is no question that it will produce a good grade of brown wrapping paper, and with this addition we have made a very complete utilization of our 5,000℔ of wood. The difficulty heretofore has been that the Naval Stores manufacturer has approached the problem with the view of making the woodpulp plant an annex to his existing plant. The woodpulp plant is the more expensive, requires the more skilled labor, and is by far the more important, so that the rosin and turpentine production should be considered rather as an annex to the pulp plant, or, better still, the whole should be considered as one complete proposition. Many people have this combination of rosin, turpentine, pine oil and woodpulp in their minds at the present time. There is no doubt that it will be tried before long. It is only to be hoped that when it does receive its trial it will be under the supervision of men thoroughly acquainted with both the woodpulp industry and the wood extraction industry, and with the aid of the most competent chemical engineers there are available. In this way it can build on the mistakes of its predecessors, and it seems to me to stand an excellent prospect of success. There has too much good work gone into this industry, and there is too much accumulated information available to allow it to languish. I feel sure it has an important future, and when its success ultimately comes, very large credit will be due to the chemists and chemical engineers who have made it possible.

Mixing and Centrifugal Mills

IT is of great advantage to supplement the regular work of the wholestuff beating engine, by a whipping, carding and breaking of the pulp under raised beater rolls, thereby insuring a more thorough mixing. The fiber bundles set free by the beating process are thereby resolved into fine fibrous elements.

While with many kinds of fibers the beating work is the most important and difficult part of pulp preparation, says Director Paul Ebbinghaus, of Copenhagen, in *Wochenblatt für Papierfabrikation*, No. 32, 1915, page 1435, because the beating proper has to effect the crushing of overgrown plant cells and the transformation of resistant cells into fibrills, also the disentanglement of hard knots into uniform, fine fibers, in the case of surrogate papers, the beating work is very backward, because in this instance the carding and mixing work is the principal thing.

In the work he has written especially for practical men, E. Kirchner ("Das Papier," iv; Ganzstoffe, p. 247) speaks of the productive and unproductive work of the beating engine, according to A. Pfarr's perception. He does not agree that the carding and mixing work of the beating engine should be regarded as unproductive labor and quite correctly points out that the pulp, for some papers requires no grinding; in such cases the productive work of the beating engine would be equivalent to 0, the unproductive to 100 percent, which would not be reasonable. But Kirchner has determined, on a basis of very accurate power determinations, that the old style trough beating engine requires relatively a great deal of power.

These revelations in regard to the process of beating engine work, have led of late to the introduction of a mixing and centrifugal mill. Two disks mounted on horizontal shafts and standing parallel to each other are equipped with angular teeth, so arranged concentrically that the rings of teeth on one disk, confront the interspace between the teeth on the other, without coming in contact with them. The shafts on which these disks are mounted are each driven by a belt in the opposite direction, to make 400 revolutions a minute. Otherwise the arrangement is the same as in the ordinary disk and cone pulp refiners. The ordinary work is effected by the usual beating engine, the carding and intimate mixing being effected by the near centrifugal mill in an admirable manner and with considerable saving of power.

Properly ground woodpulp should be disintegrated in the beating engine, and passed thence to a storage vat and from that to the centrifugal mill. In an establishment that recently installed such a centrifugal mill, it was possible to lay off three out of six beating engines. A centrifugal mill, with an output of thirty to forty tons daily, requires at most seven horsepower for its operation. The printing, blotting and absorbing papers produced are distinguished by their perfection and faultless felting.

American Paper and Pulp Association

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Technical Section

Publication Committee

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Thomas J. Keenan

Membership, either active or associate, is open to any person of technical education occupying a position with a member of the American Paper and Pulp Association; persons who have special qualifications or experience, and others who are qualified by their connections to support the aims of the section.

The objects of the Technical Section of the American Paper and Pulp Association as set forth in the Constitution and By-Laws are: To stimulate interest in the science of pulp and paper making; to provide means for the interchange of ideas among its members, and to encourage original investigation.

Gratifying Gains in Membership

IT is gratifying to report steady gains in membership for the Technical Section of the American Paper and Pulp Association. As the year draws to a close it is expected that applications will be received in greater numbers, since all who are admitted during the remainder of the year 1915 will continue in good standing during the calendar year 1916 on the payment of the annual dues of $5. This also entitles members to a year's subscription for PAPER from the day of their election.

As there is strength in numbers it is hoped that every member will do his utmost to induce others to become members. The Section is much indebted to G. F. Steele, secretary of the Newsprint Manufacturers' Association, for the names of representative men in the industry, who are eligible for membership. Much of the strength of foreign organizations of pulp and paper technologists, like the *Verein der Zellstoff und Papier Chemiker* and similar organizations, is derived from the representative character of its membership, the leaders among the manufacturers of pulp and paper, as well as those identified with the engineering and chemical branches, being enrolled and taking an active part in the work of the organization.

NEW MEMBERS

During the interval between October 23 and November 8 a list of twelve applications has been approved by the Executive Committee and several applications are under consideration. The following gentlemen have qualified and been elected members since the last report:

Corcoran, J. C., salesman, Rice, Barton & Fales Company, Worcester, Mass.

Dorman, Edward O., salesmanager, Champion Coated Paper Company, 281 Broadway, New York.

Emerson, Herbert, C., president, Emerson Laboratories, Springfield, Mass.

Fishburn, Victor E., chemist, Watab Pulp & Paper Company, Sartell, Minn.

Fisk, Ira T., superintendent, Stevens & Thompson, North Hoosick, N. Y.

Hockley, Claude C., chemical engineer, Union Bag & Paper Company, Hudson Falls, N. Y.

Lansing, Stuart D., president, Bagley & Sewall Company, Watertown, N. Y.

Low, Emile R., assistant production manager, Beaver Board Company, Buffalo, N. Y.

McKee, George M., general manager, Donnacona Paper Company, Ltd., Donnacona, Que., Canada.

Moore, Hugh K., chief chemist and chemical engineer, Berlin Mills Company, Berlin, N. H.

Murray, Edward B., vice president, Union Bag & Paper Company, 233 Broadway, N. Y.

Stephenson, J. N., assistant professor, School of Pulp and Paper Making, University of Maine, Orono, Me.

Preparing for the Annual Meeting

SECRETARY Naylor of the general association is already at work on plans for the annual convention of the American Paper and Pulp Association, which will be held at the Waldorf-Astoria hotel, New York, on Wednesday and Thursday, February 16 and 17, 1916. Judging from the foresight and energy displayed by Secretary Naylor, next year's convention should be the biggest and best meeting ever held by the American Paper and Pulp Association.

The Technical Section is expected to play a prominent part in the next convention and every member should plan ahead so as to be able to come to New York and participate actively in the work of the Section. Members in all parts of the United States should begin making arrangements now to attend the meeting. The reports of officers and committees will be of unusual interest and value and it will be encouraging if a large attendance of members is present to discuss and take suitable action on the papers and reports as they are submitted.

The splendid results achieved at the September meeting, held in connection with the National Exposition of Chemical Industries, have proved exceedingly encouraging and served to stimulate members to original work bearing on problems confronting the industry, and the secretary has already received one paper, illustrated with charts and diagrams, for presentation at the annual meeting of the Section in New York next February.

Attention is again called to the prizes offered by the Technical Section for papers dealing with problems actually encountered in pulp and paper work. Full details of the conditions governing the award of prizes were published in PAPER for October 20.

German Paper Chemists' Association Prizes

HERR L. J. DORENFELDT, of Christiania, and Dr. Kölle, of Frankfort-on-Main, in addition to the prize offered in 1913 equalling $250, have now offered an additional prize of $375 for the best paper on the production of lye from sulphite boiling, including a description of the various methods, such as vat and tower systems. Part of the prize ($125) was awarded in 1913 to Dr. Remmler, of Cavelwisch. A further competition which had been opened for last year respecting the steaming of wood has been postponed till the current year, while the opening of a new competition originally planned for October 1, 1915, has been deferred till next year, on account of the war.

An examination will be held on December 14 for the position of pulp and paper engineer in the Forest Service at a salary of $3,500 a year.

PAPER

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Cooperation

IN response to a call issued by a number of prominent manufacturers in Massachusetts, a meeting was held at the Copley-Plaza Hotel in Boston, Thursday, November 4, which was attended by about fifty or sixty representatives of the more important industries operating in the State.

The purpose of the gathering, as set forth in the call, was to bring into existence a permanent organization of the Massachusetts manufacturers through which they might be enabled to make cooperative effort in matters of mutual concern.

After a full discussion of the plan and scope of the association, the enterprise was launched with marked unanimity and enthusiasm. The organization is known as The Associated Industries of Massachusetts, and it is proposed to direct its energies toward the protection of the interests of its members.

Such work as it may be able to accomplish will redound not only to the benefit of those who belong to the association, but to Massachusetts manufacturers who do not belong as well; for which reason we are prepared to believe a great number will not join, for a large proportion of the people, we have discovered, always prefer to find shelter under the umbrella supported by someone else.

The Associated Industries of Massachusetts is not a social organization, though society is always influenced for better or for worse by any improvement affecting the condition of the people; it is not a religious organization, though it does encourage the spirit of brotherly love and the spirit of the golden rule; nor is it a political organization, though in the broader and better sense it must necessarily give attention to those political matters which have to do with the encouragement or depression of industrial activity.

There can be little doubt that, if conducted along the lines indicated by the constitution which was adopted at its organization meeting, the Associated Industries of Massachusetts will prove to be exceedingly helpful not only to the concerns directly connected with it, but also to the entire State of Massachusetts.

It would hardly seem necessary to speak at all of the importance or benefits of organized effort. Cooperation, it has been demonstrated, is not only desirable, but absolutely necessary. The wisdom of getting together and the folly of remaining apart is very well illustrated by the story told of the guard who had watch over a hundred or more lunatics that were allowed the liberties of the grounds at an insane asylum. A visitor asked him if he did not fear he might some day be overpowered, thereby permitting the escape of all the inmates of the asylum. He replied that he was not afraid of any one of them. The visitor then suggested that they might get together and make it impossible for him to defend himself, whereupon he replied, "If they had sense enough to get together, they would not be in a lunatic asylum."

This is an age of big things. Policies are framed and enforced not by the individual, but by the combined strength and effort of numbers, which is not only legitimate but in the interest of all.

Occasionally we find a manufacturer who hesitates to confer with his competitors fearing apparently that others may profit more by the information obtained from him than he is able to profit by what he may learn from them. This of course is an ill-founded fear. We do not happen to know of any one who is wiser than all the rest, and if such an individual should be found, he could still afford to be generous, for his surplus wisdom would enable him in any event to hold his own.

Granting a manufacturer has nothing to learn from his competitors, still it is to his own advantage to educate the rest of them, if he is able to do so. There is infinitely more to be feared from an ignorant competitor than a wise one. The manufacturer who knows nothing about the cost of his goods, who is not informed as to market requirements, and who has no vision of the future, is the man who demoralizes trade and upsets business principles. Better indeed for everybody if all were fully advised. But aside from the opportunity which is offered for mutual improvement of conditions and for increasing manufacturing efficiency and thereby diminishing the cost of production, cooperation is essential as a defensive measure.

There is now immediate need for commercial preparedness. In the first place, the manufacturer must deal with organized bodies. The source of his material supplies is usually controlled by organization, and ordinarily he disposes of his goods to organized dealers or consumers. Thus he is between the upper and the nether millstones of organization, and cannot hope long to survive by individual effort. Labor is organized and always will be. The politicians are organized. So that in whatever direction you may turn, it is to face organization. What hope therefore is there for success in industrial life without cooperation?

In our opinion the manufacturers of Massachusetts have acted wisely; and if their example were followed by the industrial leaders of other States, great good might be accomplished, provided the purposes of such organization are proper and the management wise.

The time is at hand when the sentiment of business men should make itself felt in shaping the political policies of this country. Legislation and the administration of Government should not be left entirely to professional politicians. The men who lead the industrial life of the country and accomplish the things which make for our wellbeing should have a voice in shaping the affairs of the nation. This influence cannot be exerted by the occasional expression of individual opinion. In order to make itself felt, industry must speak as a unit, and voice its opinions and demands through organization.

It does not follow that individual effort should in any measure be suppressed or minimized, but effective endeavor means cooperation.

Playing the Game

THE editor of PAPER is in receipt of an interesting letter from J. Newell Stephenson, instructor in the department of chemistry, University of Maine. The communication deals with our commercial outlook, particularly with reference to foreign competition, concerning which it is very pertinently stated:

> There are few men or firms that have the energy and incentive to get out and hustle just to beat themselves, to do a little better than they ever did before. They are willing to just slide along, so long as they are making a living. But let a rival appear on the scene and there will be signs of life at once. Here is a real foe that threatens and the whole force is energized with a definite purpose. The purpose may be to beat the other fellow, but one result will shortly be an increase in efficiency and an *esprit de corps* that formerly was absent.
>
> It seems to me that competition from abroad should be held up not solely as a bugaboo to our business enterprises, but that such competition should be an incentive to better cooperation and team play, that many may benefit by their individual efforts. I think that our Government should train and coach our industries for this competition, not for the purpose of beating anybody, but for the purpose of enabling Americans to get the most out of American effort and enterprise.

It is perfectly true that our best efforts are made when we are compelled to make them; and it is just as true that competition obliges us to develop energy and efficiency. It is also a correct statement of the case that our Government should in a sense train and coach our industries for the commercial game in which we are perpetually engaged, and this preparation for the combat must go on unceasingly. We cannot, however, be indifferent to the result of the game. It is not enough, commercially speaking, to feel that we have done our best, if that best was not good enough to win. There is little comfort to the man who struggles to capture trade to have it said of him in the end that he made a good fight, if some one else carries off the trade.

We do not believe in that degree of paternalism which shifts responsible effort from the individual to the Government. A wise Government does not guarantee the success of any citizen engaged in commercial enterprise, without regard to the effort which may be made by the individual; nor should it ever do so.

Our commercial team should be constantly coached and trained for the contest in the open field. But it must not be forgotten that in all competitive events the effort is made by wise managers to equalize as nearly as can be done the opportunities and advantages of the contestants.

If you will closely observe the men who struggle in a game of football, it will be seen that they have not only been trained in a manner to develop their fleetness and strength, but that the management has made every legitimate effort to guard them against possible injury. They are provided with padded suits and headgear, for *protection*.

Our American manufacturers should be taught that they cannot hope to win, or have the right to win, unless they make their best effort. That being done, the Government, acting as trainer and coach, should see that they are afforded such protection as may be necessary to equalize the struggle. This principle of equalizing contestants encourages activity rather than interferes with it. Few men would have the heart to play the game of golf with Jerry Travers if he were not willing to afford some protection to his opponent by taking a handicap. It is his custom, therefore, as it is that of every good sport, to arrange his matches on terms that will give everybody a chance.

That is what the Government should do with its industries. It should act as official handicapper. Not fixing the terms so that the contestant is bound to win just because he is an American, but making the conditions such as will equalize advantages and give the American a show to win by his own effort.

THE practical introduction of woodpulp for papermaking, so far as England is concerned, dates from the 'sixties, but experiment were made long before this epoch. An Italian papermaker is stated to have taken out a patent in 1826. In Great Britain, Desgrand, Johnson, Newton and others were pioneers in this line, and Houghton took out a patent in 1857.

THE WEEK'S LATEST TRADE NEWS

Tissue Manufacturers See a Rising Market

[SPECIAL TO PAPER]

GREEN BAY, Wis., Nov. 9—With the increased demand for all varieties of paper, the manufacturers of tissue paper anticipate higher prices will be prevailing by the end of this month. This sentiment was expressed today by local manufacturers, who are much encouraged over the business outlook.

Prices are rising slowly in some markets now, the Green Bay manufacturers have learned, and the tendency is toward a stronger and higher market, the dealers contend.

Conditions have shaped themselves in the last few weeks so that it seems certain prices will be advanced. The demand has been such that manufacturers do not care to undertake contracts for longer than a sixty-day period. They are firmly convinced that by that time higher prices will prevail and they want to be in shape to handle orders when the advance hits the market. Price cutting, which has been in vogue till recently, looks foolish to the Green Bay manufacturers and they have declined to meet prices at which they can not make money just for the sake of getting the business from the other fellow.

Charles F. Gerrity, of the Federal Paper Company, Chicago, spent the week-end in the Green Bay conferring on contracts and trade matters with the local manufacturers.

Color Situation Grows Acute

[SPECIAL TO PAPER]

APPLETON, Wis., Nov. 9—The color situation is becoming more and more critical all the time. No one knows what the end will be provided the war keeps up and the local efforts at manufacturing anilines do not go forward more rapidly than now seems likely. Deep-colored papers already have reached a price greater than customers usually are willing to pay. The trade is satisfying itself with lighter colors, and it looks as though even these ere long would go out of reach. All sorts of substitutions and expedients are being resorted to, but the probability is that the situation will become worse rather than better for some time to come.

Tinted Papers Advance in Price

[SPECIAL TO PAPER]

HOLYOKE, Mass., Nov. 9—The shortage of dye is beginning to be strongly felt in the paper business and has already caused an advance in price in a number of instances. A fractional advance is announced by the American Writing Paper Company in its terra cotta, two cents in its mandarin dark blue and four cents for scarlet, a good scarlet dye having almost disappeared from the market. The Crocker-McElwain and other mills in the city are taking orders, in most instances, where colors are to be used, subject to their ability to secure the desired colors for manufacture.

Notice has already been given by some of the mills that the run of one color to match another will vary much more than in the past owing to difficulty in securing the proper dyes to match. In many cases colors have to be combined to secure the color wished at an added expense. The shortage in dyes is naturally felt more severely by the makers of heavy paper, where the coloring is in rich tints calling for a greater amount of the dye. The fine writing paper mills in the city manufacturing ledger and bond papers are not so quickly affected as the amount of color required for the slight tints is comparatively small.

Several of the paper manufacturers at the beginning of the war secured a large quantity of the dyes and are congratulating themselves on their foresight. Among these companies was the American Writing Paper Company and the supply has not yet been entirely used, though the available supply is dwindling rapidly.

It looks as if eventually white might become a fashionable color in the paper trades.

HAPPENINGS IN THE NEW ENGLAND FIELD

William F. Whiting, of the Whiting Paper Company, has bought the home on Appleton and Elm streets formerly occupied by his father former Congressman William Whiting and will remove there from his present home on Linden street.

Willard T. Libby, for the past six years superintendent of the Montague mill of the International Paper Company, has resigned his position to accept one with the Remington Paper and Pulp Company, of Watertown, N. Y., and will take up his new work in a short time. Mr. Libby went to Turners Falls from Brunswick, Me., where for several years he was with the Pejepscot Paper Company.

The Loring Axtell Company, printers, of 338 Worthington street, Springfield, have made a voluntary assignment for the benefit of their creditors to Frederick J. Hillman, of the New England Audit Company. The assets and liabilities are about the same, being approximately $25,000. The business will be continued for the present.

Scarcity of Paper Dyes Felt in Kalamazoo

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 9.—Papermakers in this district are just beginning to realize how serious is the problem of securing coloring material for paper. In fact, except those who are protected by contract, it is almost impossible to secure enough coloring to fill orders which call for colored paper. What will be the result manufacturers cannot say, but it is generally believed that next year will see less colored paper used than for many years past.

PAPER PRICES BOUND TO ADVANCE

The scarcity of certain materials is bound to force an increase in the cost of paper. That is sure to come, said one well-known paper manufacturer today. In fact, the present heavy buying of a number of jobbers would indicate that they, too, believe the price of paper will soar after the first of the year, and it is their desire to get as much stock on hand now as possible in order to buy at the lower price.

Kalamazoo Paper Company's Water Supply

[SPECIAL TO PAPER]

KALAMAZOO, Mich., Nov. 9.—According to President F. M. Hodge, of the Kalamazoo Paper Company, workmen will soon start the sinking of the new wells which will furnish that company with its future water supply. All of the material is now on the ground, and it is hoped to have the work completed as soon as possible.

Just how many wells will have to be driven is not known as the mill requires a daily capacity of 5,000,000 gallons of water. This supply in the past has been secured from the Kalamazoo river, but Mr. Hodge believes that a much better and more pure water can be secured from underground and for that reason he is having the wells sunk.

THIEVES AT RIVERVIEW COATED PLANT

Thieves one night last week stole a large quantity of lumber from the Riverview Coated Paper Company's new addition. So much of the lumber was taken that the laborers were unable to continue work on the mill during the next day. Officers have been unable to secure any trace of the thieves. The company is building a new store building and a machine shop.

Battle Island Paper Co. Plant Sold

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 9.—The plant of the Battle Island Paper Company was sold at the Court House in Oswego last Thursday at an auction held under the direction of the trustees in bankruptcy. The successful bidder was S. Gay Daley, representing the bondholders, and the price paid was $27,200. Attorney Frederick M. Boyer, of this city, a stockholder, director and officer of the Warren Parchment Company, of Dexter, and the Harmon Paper Company, of Brownville, was among the bidders at the sale. The machinery and real estate of the company were sold to separate bidders.

The Battle Island Paper Company was last year forced into bankruptcy, its finances having been in an exceedingly bad condition. The plant is one of the best of its kind in the State, having cost upward of $500,000 to build and equip. It is said that the outstanding bonds amount to $400,000.

BLACK RIVER.

Universities and Industries Will Cooperate

"University and Industry" is the assigned topic for discussion at this month's meeting of the American Chemical Society at Rumford Hall, 50 East Forty-first street, New York, on Friday evening, November 12, at 8:15 o'clock. The notice of meeting reads:

During the past year the chemical industries have been receiving unusual attention on the part of capital, the public and the press of the country. Various suggestions have been submitted from time to time, intended to stimulate the development of the chemical industries, such as a special protective tariff, an antidumping clause, a working clause in our patent laws, etc.

While all of these suggestions merit thorough consideration, nevertheless, it would seem that they do not go to the root of the problem. The university is the foundation stone of science. Science is the foundation upon which industry rests. The close connection between university and industry is thus indicated, but it has not as yet been established to such an extent that the industries as well as the universities derive from it the greatest possible benefit. This is well illustrated by the fact that even purely commercial associations have taken cognizance of the situation and the opportunities which lie dormant. The Chamber of Commerce of the United States, for instance, recently issued a special circular letter under the caption "Great University Laboratories May Assist Business," and the directors voted to refer the questions involved to a special committee.

It appears desirable, therefore, to impress anew the necessity of cooperation between the universities and the industries upon the chemists and the educators of this country, upon capital, manufacturers, the public and the press, and with that in view, a series of meetings has been arranged for the season 1915-16 at which representatives of the universities and the industries will speak. The first of this series will be held in Rumford Hall, 50 East forty-first street, on the evening of Friday, November 12; chair will be taken promptly at 8:15 o'clock.

SUBJECT

"University and Industry"

SPEAKERS

Nicholas Murray Butler, president of Columbia University.

M. C. Whitaker, professor of chemical engineering, Columbia University.

W. J. Gies, professor of biological chemistry, Columbia University.

Charles E. Lucke, professor of mechanical engineering, Columbia University.

The usual informal dinner will be held before the meeting, and through the courtesy of The Chemists' Club it will be served in the dining hall of The Chemists' Club, 52 East Forty-first street, at 6:30 p.m. Visitors are invited. The charge for the dinner is one dollar. This dinner is specially arranged for the members and their guests, and it is necessary that the number to be so provided for should be known before noon on Thursday, November 11.

Machinist Gray's Experiences in France

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 9.—Richard Gray, an expert machinist in the employ of the Bagley & Sewall Co., who during the past few years has been sent all over the world by that concern supervising the setting up, altering and modifying of fourdrinier paper machines made by the Bagley & Sewall Co., has just returned to his home in this city from France, after having spent nearly a year across the water. Mr. Gray was at the plant of the *Petite Parisienne* at Paris, in which mill are three machines made by the Watertown concern. Before sailing from Liverpool for New York on October 23, he spent a few days with relatives in Scotland.

AMERICAN STEAMSHIP LINES ARE KEPT BUSY

"The American line from Liverpool is overcrowded with passengers, although the English boats have room to spare," said Mr. Gray upon his arrival here. "The steamer on which I sailed, the *New York,* had two blazing electric lights to illuminate the name on each side, as well as the lights on the stern. The lifeboats were swung from the davits ready to be lowered, until Fastnet Rock, fifty miles from the coast of Ireland, was passed.

PARIS IS ASSUMING NORMAL ASPECT

"The majority of the passengers were Jewish and Irish, with a sprinkling of English, and a few Americans. Among the Americans were two Vermonters who had been in Paris demonstrating machines for manufacturing shell cases. Paris is livening up again. France is a good business country and is just recovering from the setback occasioned by the war. The busses are again running on the boulevards, with women taking the place of men as conductors. Conditions are rapidly becoming normal in the city.

BLACK RIVER.

"Safety Round Tables" in Wisconsin

[SPECIAL TO PAPER]

GREEN BAY, Wis., Nov. 9—"Safety round tables" will be conducted in Green Bay during the ensuing year by a committee of nine having A. E. Cofrin, superintendent of the Northern Paper Mills, as chairman; and Dean Treat, assistant superintendent of the Wisconsin Public Service company, as secretary. On the committee will be representatives of the city government, contractors, railroad men, central labor delegates and factory workers.

Besides Messrs. Cofrin and Treat, the following gentlemen are members of the committee: W. H. Dolan, assistant superintendent of the Chicago & Northwestern Railway's Lake Shore division; Paul Huybrecht, an alderman and the president of the Federated Trades Council; John Sweeney, chief of the fire department; Edward Schumacher, city electrician; Charles Smith, president of the Building Trades Council; H. J. Selmer, a building contractor; and A. C. Masse, superintendent of the Britton Cooperage Company.

AIM TO PREVENT ACCIDENTS

The committee will work to prevent accidents and in that work it wants the cooperation of the general public. Suggestions on things that need remedying will be received from any one who cares to call attention to them. It is hoped to make conditions on the public thoroughfares, on steam and electric railroads, in factories and shops safer for everyone. The safety work is being undertaken on a much larger scale than ever before in this city.

ACCIDENTS REDUCED 50 PERCENT

In the few years since the safety movement was begun in Wisconsin the number of accidents has been reduced 50 percent, as the records of the Wisconsin Industrial Commission show. John Humphrey, an inspector of the commission, will secure speakers to talk at the "safety round tables," and efforts will be made to secure the use of the council chamber at the city hall. A meeting will be held in a short time, if possible.

Business Revival in the Northwest

[SPECIAL TO PAPER]

Appleton, Wis., Nov. 9—There is no doubt whatever about the truth of the revival in the paper business. Increased business has not come along quite as rapidly as some people expected it, perhaps. But each week shows an improvement over the week before, and in all the markets tributary to this locality jobbers and customers generally are becoming strongly optimistic.

PROTEST AGAINST FREIGHT RATE DISCRIMINATION

The complaint of the Fox, Wisconsin and Chippewa valley cities in the Wisconsin railroad rate cases, was filed with the Interstate Commerce Commission last week. There has been much complaint and agitation of late under the contention that cities in these important manufacturing valleys were being discriminated against in the matter of rates by the railroads serving them. What will be accomplished by the protest remains to be seen. Some are confident that rates will be lowered, while others believe no change will be made.

A party of eighteen business men from Appleton, Neenah, Menasha, Oshkosh and Green Bay, were guests of the Menasha Paper Company, one day last week, on a trip by railroad to Ladysmith, to look over the company's big paper manufacturing plant there.

C. W. Furness, chemist at the Niagara mill of the Kimberly-Clark Company, was seriously burned about the face and hands last week by the explosion of an alcohol lamp over which he was working. His hair and clothing were ignited, and had it not been for prompt assistance he might have been burned to death.

MR. AND MRS. KIMBERLY LEAVE FOR REDLANDS

Mr. and Mrs. J. A. Kimberly departed early last week for their winter home in Redlands, California, at the conclusion of a couple of months' visit in Neenah, during which they celebrated the fiftieth anniversary of their wedding. In addition to the public reception given them the week before by their children, Mr. and Mrs. J. C. Kimberly, they were made the recipients of an informal reception by their friends every day following until they took their departure for the West. Mr. Kimberly is in especially good health, and has entirely recovered from his indisposition of last winter.

The employees of the Kimberly-Clark Company last Saturday afternoon at the Appleton Theatre, were the guests of the company at a moving picture performance along "safety first" lines. Two pictures were shown entitled: "The Crime of Carelessness" and "The Man He Might Have Been."

Frank Pearson, formerly of Sartell, Minn., has accepted a position as assistant superintendent for the Munising (Mich.) Paper Company.

W. L. Davis, of Eau Claire, spent a few days hunting on Lake Winnebago at Neenah last week.

Teeth of Workers to Receive Attention

[SPECIAL TO PAPER]

Appleton, Wis., Nov. 9—The latest enterprise that the Kimberly-Clark Company proposes to take up looking toward increased welfare of their employees is to arrange for the "conservation" of the teeth of those employees. That is to say, it is expected that a new activity will be added to those which heretofore have featured the company's mutual benefit association, designed to bring to the attention of employees the need of having their teeth properly attended to, and to assist them in the cost of having necessary work done upon them.

The company expects to put in a dentist's chair and first aid equipment at each of its mills, and will have a company dentist on duty a part of the time each week. This official will make examinations and tell employees what is required to put their teeth in proper condition, if necessary rendering first aid, and then it will be up to the subjects to get the work done. When the work is done employees will be assisted to the extent of 25 percent of the dentist's bills, provided such bills are OK'd by the company dentists.

Manufacturing Conditions in Wisconsin

[SPECIAL TO PAPER]

Appleton, Wis., Nov. 9—Last summer was by no means a wet one on an average, and the autumn has been indisputably dry. Water in the streams, which came up again after the rains of early September, has been falling for the past six weeks, and it looks as if the season was getting so advanced that there is little likelihood of the usual late fall rains coming before the regular freeze-up. If this is so the streams may get pretty low before the winter is over. The recent dry spell has been featured in the north by the starting of forest fires. These fires have not been near paper manufacturing localities, and have not had any bearing on the industry.

A small fire occurred last week at the Kaukauna mill of the Union Bag and Paper Company. The fire started in one of the wooden ventilator boxes from a hot box on the exhaust fan shaft. It was put out by the employees of the mill before any damage of consequence had been done.

DEATH OF ANDREW J. BROWER

Andrew J. Brower, one of the oldest papermakers in the valley in point of service, died last week at the Soldiers' Home in Waupaca where he had been living for five years past. Mr. Brower started in at Kaukauna in the first paper mill built there, by Col. H. A. Frambach. Afterwards when Col. Frambach built the Badger Paper Company's mill at Kaukauna, Mr. Brower went there as superintendent. When that mill was destroyed by fire and Colonel Frambach transferred his paper manufacturing activities to Cheboygan, Michigan, Mr. Brower accompanied him there.

The citizens of the city of Shawano on the Wolf river voted at a special election last week in favor of issuing bonds to the amount of $60,000 for the building of a dam and hydro-electric plant to furnish electric current for the city for lighting and motor purposes. There will be an opportunity there for water wheel and electric machinery men to do business.

A NEW BRIDGE ACROSS THE WISCONSIN RIVER

At another special election last week at Nekoosa the citizens of that place ratified the action of the village for the issuing of $15,000 worth of bonds for the building of the new bridge across the Wisconsin river at Nekoosa. This bridge was already under way, but was halted on account of supposed insufficient legal authority for its building. The election result last week however, puts everything right again.

Olsen's Device Will Prevent Wire Wrinkling

[SPECIAL TO PAPER]

Watertown, N. Y., Nov. 9.—Harold O. Olsen, who resides at 615 Hamilton Street South, this city, has just applied for letters patent on a discovery connected with the manufacture of paper, which, it is represented, will mean a saving of many thousands of dollars to the paper industry in the course of a year, and at the same time will net the inventor a tidy income. Mr. Olsen is an expert wire sewer, and for years has been engaged in mending wires and placing new wires on paper machines. In this capacity he travels all over the eastern region of the United States and Canada. Yet in all his experience there has been no way found to prevent the wire from wrinkling and cutting out, necessitating a change perhaps within twenty-four hours after a new wire has been put on a machine.

Recently, however, Mr. Olsen discovered a remedy which is applied by taking off the cylinder moulds and making an adjustment, an operation which takes about three hours. His discovery means that the heavy waste in time, loss of production and attendant cost, through the too frequent changing of cylinder moulds, will be eliminated. In speaking of the matter, Mr. Olsen said that it would not be necessary for him to make the adjustment, as he could write the instructions to the machinist of the mill and he could do it himself.

It is asserted that by the application of this discovery manufacturers will save amounts varying from $10 to $50 every little while; in fact, each time there is wire trouble on the machines.

on-
Black River Offi-
The
ke shop.

LAST WEEK

We wrote about brains and prejudice to try and get you to think.

If you have not given it a thought, would it not be worth while to sit down right now and do a little figuring?

Have you ever weighed the filler you are buying when you received it; then put it in a drying oven and taken out all the moisture and weighed it again to see how much actual filler you were buying and how much water?

Figure it up; then add the freight on water—perhaps, it might be well to burn your paper and see what your actual retention is.

THEN get your actual cost of filler. Stop fooling yourself by thinking you are buying a cheap filler.

TALCLAY

contains NO water; it's 100% clay and reduces filler bills. Don't be prejudiced, use your brains.

TALCLAY is better than Clay, greater retention, no grit, mica or water.

INVESTIGATE

The St. Lawrence Talc Co., Inc.

Natural Bridge, N. Y.

Pejepscot Paper Co. Improvements

[SPECIAL TO PAPER]

PORTLAND, Me., Nov. 9—An innovation is being tried out at Flagg dam, Dallas, Me. The Pejepscot Paper Company is to install there and also at Redington pond, near the dam, two steam loading plants or carriers to take the pulpwood from the water to the cars. About 5,000 cords of wood will be loaded each year, according to the statement that reaches this city. This will continue for a number of years.

At Redington this pulpwood will be hauled in winter and unloaded upon the ice of the pond at Redington. For the Flagg dam operation the pulpwood will be hauled in winter from the northern slope of Saddleback mountain to Saddleback lake, and driven in the spring down the south branch of Dead river to Flagg dam.

A new siding of eight-car capacity has been constructed near Gull pond, Rangeley, Me., for the use of the S. D. Warren Paper Company for the shipment of poplar pulpwood the coming season.

The annual inspection of the Sandy River and Rangeley Lakes railroad by the officials of the line has just been completed. This line of railway runs through a section of Maine where much pulpwood is cut. It was a matter of much interest to President Morris McDonald, of the Maine Central Railroad, also president of the S. R. and R. L. R. R. who feels that the transportation of paper and pulp materials is a very important asset to the business of the road.

Black-Clawson Co. Would Reclaim Machine

[SPECIAL TO PAPER]

DAYTON, O., Nov. 9—In the case of the Black-Clawson Company, Hamilton, one of the most extensive concerns in the country engaged in the manufacture of paper mill machinery, against the Sterling Paper Company, of that city, with central offices in Dayton, the plaintiff Thursday filed in the United States Court at Cincinnati an amendment to its petition setting out an additional claim for $11,529, alleged to be due as balance of the purchase price of a 100-inch fourdrinier papermaking machine delivered by the plaintiff to the defendant in April, 1913. The court is asked that in case it shall be found that the mechanics' liens set up by the plaintiff in the various causes of action set out in the petition are not enforcible against the property of the defendant that the plaintiff may be permitted, in default of payment therefor, to reclaim the machinery installed by it for the defendant company.

Asks to Extend Railroad Into Adirondacks

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 9.—The Emporium Forestry Company, of Utica, owning and lumbering an 85,000-acre timberland tract in the Cranberry Lake region of the Adirondacks, between Cranberry Lake and Tupper Lake, has made application to the Public Service Commission, second district, for permission to extend the line of its railroad from Cranberry Lake village to Newton Falls.

The road already runs a distance of sixteen miles through the forest connecting Childwold station on the Adirondack division of the New York Central with Cranberry Lake village. It is now hoped to extend it a distance of ten miles further to connect with the St. Lawrence division of the New York Central at Newton Falls, where is located the plant of the Newton Falls Paper Company. When completed this road will mean a saving of 100 miles in the shipping of Canadian pulpwood from the Quebec region to this part of the State, meaning many hundreds of dollars to pulp and paper manufacturers in the course of a year.

It will also shorten the haul of other shipments and the Chamber of Commerce of this city and the Board of Trade of Carthage have adopted resolutions urging the Public Service Commission to grant the application because of the benefit to the North Country. BLACK RIVER.

George H. Harvey Shot While Hunting

[SPECIAL TO PAPER]

DAYTON, O., Nov. 9.—The whole Miami Valley was greatly shocked Wednesday to learn of the unfortunate fate that befell George H. Harvey, secretary of the Colin Gardner Paper Company and the Gardner-Harvey Paper Company, who was seriously and, perhaps fatally, shot by an accidental discharge of a gun in the hands of George Neibel, while hunting rabbits. They had been out but a short time when the accident occurred. The detailed story of the accident was told shortly after it occurred by Mr. Neibel, as follows:

"When we first started hunting in the vicinity, in which we were when the unfortunate tragedy took place, a farmer nearby showed me a field, in which he did want us to hunt. Shortly afterward as we were emerging from a dense thicket, I saw Mr. Harvey, following the dog in the direction of this forbidden tract. Calling to him to wait, I started to tell him of the farmer's request. As I approached him, a rabbit jumped up, and I think we both shot at about the same instant, but one of us killed the rabit. Mr. Harvey was nearest it and started to pick it up just as I was letting the trigger of my still loaded barrel down so that I could eject the empty shell. As I touched the trigger, I tripped upon some thick undergrowth and almost fell to the ground. At the same instant my finger slipped from the trigger and the gun was discharged. I was then about twelve feet from my friend.

"As Mr. Harvey fell to the ground, both his brother and myself rushed to him and found him bleeding from a frightful looking wound in the back part of his head. I think he was conscious at that time, for when we laid our coats under his head and tried to make him comfortable, he took his handkerchief from his pocket, wiped the blood from his face, raised one hand to his head and tried to say something. When I told him his brother had gone for a doctor, he remained quiet, and soon after lapsed into unconsciousness. Meanwhile the word spread through the city and Mr. Harvey's relatives and friends were soon hastening to the scene. Mr. Harvey was taken to the nearest farmhouse where first aid to the injured was administered. Later he was taken to the Rolling Mill Hospital, where an operation was performed by Dr. J. C. Ransakoff, of Cincinnati, who had been hastily summoned."

At first it was believed there was no basis for hope that he might recover. The next day the friends of the wounded man began to feel that there was a remote possibility that death could be averted. Since that time Mr. Harvey has been lying in an extremely critical condition with his chances, it is believed, about even. The attending surgeons state that barring unexpected developments, he may recover. On the following day Mr. Harvey regained consciousness for a short time. During this period, he asked for Mrs. Harvey and for a drink of water. He soon lapsed into unconsciousness again and has been conscious intermittently since that time.

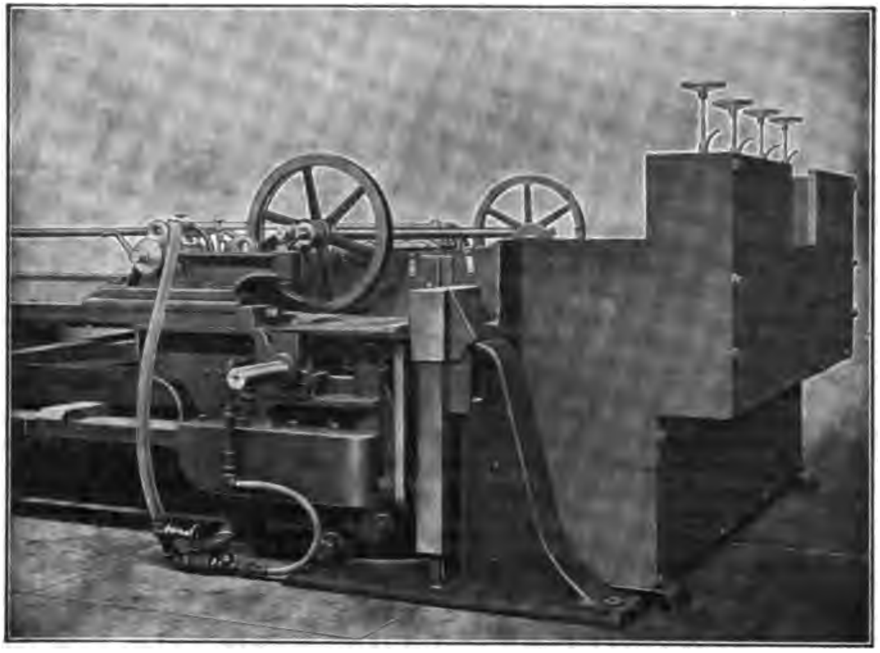
To the entire community, the new of the tragic occurrence was a severe shock. Mr. Harvey is recognized as one of Middletown's most prominent and active citizens. He has the respect and admiration of every one. Messages of condolence and sympathy were sent in great numbers to the members of the family from widely distant places. Every one is earnestly hoping almost against hope that his chances for recovery are improving.

Mrs. Sterling is Dead of Pneumonia

[SPECIAL TO PAPER]

WATERTOWN, N. Y., Nov. 9.—Last Wednesday night Mrs. Marie F. Sterling, wife of Edward B. Sterling, general manager of the West End Paper Company, of Carthage, died at her residence, 140 Clinton Street, after an illness of about a week of pneumonia. Until a short time before her death it was thought that she would recover.

Mrs. Sterling was a member of one of the oldest and most respected families of the city, having been born August 8, 1846, the daughter of Mr. and Mrs. Addison M. Farwell. She spent her entire life in this city. On November 13, 1879, she was married to Mr. Sterling, who survives her. She is also survived by one sister, Mrs. Ella F. Wardwell, of this city.



THE Ideal Fourdrinier Part is supported at breast roll by a link resting on bearings so designed that there is absolutely no friction on supporting points, and, therefore, no wear. No special foundation is required at the breast roll end of the Ideal, and the entire shaking mechanism is self-contained. It is not necessary even to bolt the stands to the floor, a clear indication of the smoothness and lack of friction in the construction of the shaking device. The vibration is as smooth as that of a clock pendulum.

It was an Ideal Fourdrinier (a 90-inch machine) which ran the first twenty months of its life with repairs averaging six cents per ton. Compare this with the record of your own machines.

Send for bulletin describing the Ideal

The Sandy Hill Iron & Brass Works
Hudson Falls, N. Y.

Requirements of An American Dye Industry

Dr. Bernhard C. Hesse Scores Conditions in the United States and Indicates Remedies

DISCUSSION of the actual and the possible, in connection with manufacture of coal-tar dyes in the United States, goes on between four considerable groups of disputants. There are capitalists and chemists who manufacture, middlemen who distribute, consumers who stand ready to use the output, and officials of the Government who marshal statistics and, as trade specialists, advise as to ways and means of fostering the industry or who make law.

The foregoing is introductory to an article in a recent issue of the *Christian Science Monitor,* a Boston daily paper, the editor of which evidently takes unusual pains to insure accuracy in the presentation of technical information. Continuing, the article says:

The data for action by Congress having been far from completely gathered, the lawmaking group naturally is not saying much, particularly since the larger issue of method in dealing with problems of new revenue and conservation of industrial interests has yet to be determined. But, when the specific issue of rates on foreign-made dyes is taken up, lawmakers undoubtedly are to have much more accurate data from the Government's own bureaus to guide them than ever has been furnished before. Clashing arguments of producers and consumers will be subjected to closer analysis.

What consumers of dyestuffs that are needed in some of the major industries of the country have thought about the situation, they have made known in pressure upon the State Department, to induce diminution of the crisis caused by the war's embargo on imports; and their effort has not been without its practical, affirmative results. Consumers, sometimes openly and sometimes covertly, also have aided home manufacturers in extension of old plants and in organization and capitalization of new ones. This fact hints at a friendlier attitude toward American producers when the choice has to be made later between this course and resumed dependence on an outside supply.

As for the middleman group, it has not been vocal in any conspicuous way, possibly because of its intention to do business whatever the ultimate decision as to source of supply.

From the group made up of manufacturers and chemists who may speak with authority as to what has been done in the past, what is now being done, and what may yet be done by proper combined effort of producers, consumers and the Government, there has come much literature, formal and informal, technical and popular. The explanation is not difficult. They were under censure as soon as the war opened and foreign-made dyes were cut off, being charged with failure, in days of peace, to develop the home industry so as to meet home demands when imports were blocked. They were charged with inferiority in their professional attainments and in their patriotic foresight.

The defense they made was immediate and formal, and found its most elaborate and detailed expression in the statement of the New York Section of the American Chemical Society, on November 6, 1914, supplemented by editorials and special articles in the technical press. Prominent in the action by the American Chemical Society and in discussion of the issue, whether carried on in the *Journal of Industrial and Engineering Chemistry* or in the daily press, has been Dr. Bernhard C. Hesse, an expert authority on coal-tar dyes and consulting chemist, serving, among other firms, one of the large New York City corporations specializing in industrial chemistry and manufacturing. Charged with inability to pass disinterested judgment upon the problem because "pro-German," Dr. Hesse has said in reply:

"My first name, my middle name and my last name are all and each German, and I am of German extraction. At the time I was born in Michigan, my father was a naturalized citizen of the United States; my mother was a Michigan-born woman. I received all my scholastic education in the United States—five years at the University of Michigan and three years at the University of Chicago. From the latter I went directly into the employ of the largest coal-tar dye factory in the world, at its German plant, and remained in its employ for nine years and five months, traveling between New York and the plant as occasion required; for the last nine years and three months I have had my office in New York, and while I have done there some work for German houses, the total income received from them in any form, direct or indirect, during that entire period, does not amount to half the salary of an inferior office boy. I am sure this will relieve me of any suspicion of being a German spy or in the pay of German interests. I am as American as they make them."

A study of the prolific output of literature of a technical and popular sort which Dr. Hesse has produced shows that he is a stout champion of the ability of the American chemist and manufacturer to win out when given a fair opportunity, and when suitably dealt with by all parties concerned. His marshaling of the evidence as affecting at least thirty-one industries, where foreign market conditions have been met, is impressive. Where there is failure he is inclined to charge it to the apathetic attitude of persons in managerial positions, and who are unwilling to take "a chemist's chance in a chemist's way." Successful German and American chemical enterprises are conducted and managed by chemists.

A second indictment which Dr. Hesse brings against conditions in the United States applies, in his opinion, to the general situation as well as to the antebellum dependence upon Germany. Users of products, according to his view, do not cooperate sufficiently with producers, and Congress refuses to listen to the counsel of advisers who know the only terms under which competition with manufacturers and chemists in other countries, especially those of Germany, can be carried on. It is Dr. Hesse's direct charge that users of dyestuffs have invariably opposed any tariff enactment that would substantially encourage domestic production of coal-tar dyes. If today they are in serious difficulty through a lack of dyestuffs they have, he says, "their own shortsightedness to blame and cannot shift the blame to American chemists."

To buttress his charges he quotes from evidence given before Congressional committees, since 1882, relative to conditions in the domestic dyestuff making industry, and, among documents includes a memorial and protest in opposition to any advance in the rates on coal-tar colors and dyes, presented to the Ways and Means Committee in 1908 by cotton manufacturers of New England, New York and New Jersey. The largest consuming industry of coal-tar dyes in the country then respectfully submitted that an advance in rates would increase the cost of manufacture of colored cotton goods; would increase the price to the consumer in the United States; and would burden and minimize the opportunity to compete with foreign cotton manufacturers in foreign markets.

Comparison of rates asked for by dyestuff manufacturers and opposed by textile manufacturers leads Dr. Hesse to infer from the tariff schedules actually passed, that the dye and chemical makers are not yet so influential as their opponents, and he wonders what effect conditions obtaining since August, 1914, have had on the American public, and how they will shape future rate-making.

But even on the issue of shortage of dyes, prior to April, 1915, supposed to be caused by the blocking of outside sources of supply, Dr. Hesse has been somewhat incredulous, as he has studied the corresponding records of import since the war opened. While quite emphatic in his demand that the American maker of dyes should be given the same consideration, by the public and by the lawmakers, that other persons who employ capital and skill get, he is not equally ardent in his belief that this is the surest way out. Working clauses in patent laws, in his opinion, cannot be counted on at all to change conditions of an industry which Austria, Belgium, France, Great Britain, Italy and Switzerland, singly and combined, had failed to meet in any serious competitive way prior to the war, but,

Why Try to Outbid the War God?

The tremendous and unprecedented foreign demand for leather for military purposes is naturally forcing prices higher and higher.

Why should you, the user of belting, pay this "war tax" on leather when you can buy rubber belting from us at "peace prices"?

Thirty years' investigation of belting requirements in every power line qualifies us to recommend the right belt for every purpose.

RUBBER BELTING

Quaker City—Crown—Hercules

These three brands solve the belting problems for practically all classes of power transmission duty, conveyor purposes, elevator work, etc.

In quality, workmanship and performance, these belts are the ultimate values in their grades.

You owe it to yourself to investigate.

Many belt users do not realize to what extent rubber belting would increase efficiency and effect economy in their plants.

Acquaint us with your requirements and conditions—we will lay before you convincing facts, figures and PRICES.

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NEW YORK
207 Fulton Street

on the contrary, had progressively lost to Germany. Increased tariff and other protection alone seem to promise help.

The German dyestuff business, Dr. Hesse describes as a "created business" concentrated within an area 300 miles square. It has cheap water routes and short rail hauls for the transportation of materials from one factory to another, or to a seaport. It is a business of a multitude of small units, whose average daily gross value the world over is about $280, with all the units essential to complete success present and making possible interlocking dependence of intermediates and finished dyes; and since the German plants were long ago paid for and their sales organization built up, the industry "is just about a one-nation business," with outlets (before the war) in thirty-three countries. Note should be taken, according to Dr. Hesse, that any plan for development of the industry in the United States must include not only the manufacture of crudes, intermediates and finished dyes, but also sale of the product, in competition "with the very efficient merchandizing organization of the Germans." In the final analysis success is dependent upon the shrewdest and most skillful commercial management, both within and without the factory.

Dr. Hesse does not deem it necessary to have set up on a large and expensive scale what might be called a research laboratory in the narrow sense of the word. In his opinion, what is needed in the first instance and after the question of the specific dyes to be made has been decided, is "a semi-manufacturing laboratory in which to ascertain the most favorable conditions for carrying out those operations which the work of the Germans, both in their patents and in their commercial exploitation of them, have shown to be needful or worthy of prosecution." This will call "for engineering skill of the highest order, for chemical knowledge of great refinement and for experimental ability of high rank." After that has been accomplished research will follow as a matter of course and very easily.

Directions for processes of manufacture are not always to be found in the literature of the subject, and successful purchase of recipes, or engagement of competent manufacturing chemists to make whole lines of dyes, is practically out of the question, although it may succeed for a limited number of dyes or operations. Native ingenuity, skill and ability to devise successful commercial methods of manufacture must ultimately be relied upon, with every prospect of successful issue.

Dr. Hesse's attitude, therefore, is not that "it cannot be done," but "Is it worth the price?" To cut off the approximately $1,500,000 Federal revenue resulting annually from these imports (which amounts to about three-fourths of a day's ordinary disbursement of our Federal Government) and to encourage thereby a possible retaliatory commercial war with Germany and other Powers are both questions that cannot be lightheartedly cast one side; the answer is not easy, and the ultimate net result is by no means obvious. Once the United States has started it must not turn back, as it has done before, merely because the price is too high.

One point which Dr. Hesse reiterates again and again is the need of greater candor by the American user of dyes toward the American manufacturer. Importers of foreign-made dyes cannot be expected to divulge to the American manufacturer information which alone can inform him as to the actual desires of the American consumer, tested by his purchases. If the user will not say what he wants and how far he can be counted on to continue to buy with reasonable certainty, he must not expect the maker to run risks of experimentation in merchandizing. The price of establishing the industry on a broader basis must be paid by all. Financial investment, technical skill and Government aid must be supplemented by something like preferential buying on the part of the consumer, and by sincerity on his part toward the men he now asks to come to his aid in a time of need.

New Paper House in Kalamazoo

[SPECIAL TO PAPER.]

KALAMAZOO, Mich., Nov. 9.—The Southern Michigan Paper Company established here a number of years ago has been purchased by Henry G. Prosser, of Chicago, Arthur T. Bermingham, of New York, and L. P. Simons, of Kalamazoo.

Mr. Prosser and Mr. Bermingham were formerly connected with the wholesale paper house of Bermingham & Simons, of New York, and they are well known to the paper trade. It is planned by the new owners to open offices in New York and Chicago and maintain the Kalamazoo office under the direction of Mr. Simons. Mr. Simons has for sometime been connected with the Southern Michigan Paper Company.

The new concern will be known as the Bermingham & Prosser Co. Mr. Prosser and Mr. Bermingham will have charge of the Chicago office and a brother of Mr. Bermingham is in New York City at present arranging to open an office in that place. The new owners will handle all grades of paper, specializing in the Kalamazoo products. Quick service will be their watchword.

Paper pulp prepared by chemical process (cellulose, pulp made from rags, straw, peat, etc.) is now added to the list of goods, which, on importation into Russia, need not be accompanied by a certificate of origin.

Fourdrinier Wires
DANDY ROLLS CYLINDER MOLDS
CHENEY BIGELOW WIRE WORKS
ESTABLISHED 1842 SPRINGFIELD, MASS.
BRASS, COPPER AND IRON CLOTH
BANK AND OFFICE RAILINGS
WIRE SIGNS

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Rubber Belting

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BELT MADE

NEW YORK BELTING & PACKING COMPANY

New York, N. Y.	91-93 Chambers Street	St. Louis, Mo.	218-220 Chestnut Street
Chicago, Ill.	124-126 West Lake Street	San Francisco, Cal.	519 Mission Street
Philadelphia, Pa.	821-823 Arch Street	Spokane, Wash.	157 So. Monroe Street
Pittsburgh, Pa.	420 First Avenue	Boston, Mass.	232 Summer Street

THE MARKETS

New York, Nov. 9, 1915

MECHANICAL PULP

Favorable water conditions in many papermaking sections of the country are enabling mills equipped with grinding machinery to run to full capacity, though in others lack of water has forced some mills to close down their grinders. Inquiries for groundwood from news mills and a good demand for export serve to sustain a firm feeling among dealers. In some quarters higher prices are named and indications point to an advance in the near future. This is most likely to occur if the foreign demand, which is making heavy inroads on the available supply, continues. The close was firmer and holders are quoting $16.00 f. o. b. grinding mills.

DOMESTIC AND FOREIGN CHEMICAL PULP

The inability of importers to close contracts for woodpulp with Scandinavian shippers resulted in only scattered sales throughout the week. Papermakers are showing an increased disposition to purchase supplies at full asking prices. Owing to limited offerings, as a result of the foreign markets being fairly well cleaned up for delivery over the next six to seven months, coupled with a steady upward movement of values, little hope is entertained of paper manufacturers being able to purchase supplies for future needs at any reduction from present prices. Arrivals of woodpulp at New York and at outports, comprised supplies which have been sold under contracts prior to shipment. Offerings of dock lots are exceedingly light owing to limited supplies. Mills that are not protected by contracts are likely to be confronted by a scarcity of supplies, as it appears that the domestic chemical pulp manufacturers are unable to meet the requirements of mills. Quotations closed strong but nominal with the tendency still upward.

Sulphite, foreign—	
Bleached, ex-dock	3.20 @ 3.50
Unbleached, ex-dock	2.10 @ 2.25
Sulphite, domestic—	
Bleached, ex-dock	3.00 @ 3.10
Unbleached, ex-dock	2.00 @ 2.20
Soda, domestic—	
Bleached delivered	2.25 @ 2.35
Scandinavian Kraft	2.10 @ 2.20

BAGGING, ROPE, ETC.

Prices of the better grades of bagging are firmer under a good demand and larger sales. The bulk of orders booked for the week, however, was principally for account of interests other than paper mills, who appear to be unwilling to pay values asked, particularly for gunny, as prices on this article are above papermakers' views. Moderate spot stocks of old rope and a steady demand resulted in fractional appreciations in value.

Gunny, No. 1	1.90 @ 2.05
No. 1 Mill run	1.50 @ 1.70
Domestic	1.95 @ 2.25
Light Burlap	1.65 @ 1.75
Mixed Bagging	1.20 @ 1.30
Sound Bagging	1.40 @ 1.45
Wool Tares, light	1.70 @ 1.75
Wool Tares, heavy	1.65 @ 1.70
Foreign Manila rope	2.75 @ 3.00
Domestic Rope	2.80 @ 2.85
Mixed Rope	1.10 @ 1.15
Flax Waste	3.95 @ 4.45

IMPORTED RAGS

The sharp advance in price of domestic rags, together with small spot stocks and no arrivals worthy of mention, led to a firmer tendency of values. No resumption of importations is looked for until after the end of the war. The withholding of licenses on the export of shoddy and rags by the British Government is causing considerable concern among traders at Dewsbury. The latter are making a strong protest against the Bradford committee, and are urging that the exports of rags and wastes be permitted under license as heretofore.

German Blue Cottons	2.45 @ 2.50
Dutch Blues	2.45 @ 2.90
French Light Blues	2.30 @ 2.45
New Light Prints	3.95 @ 4.75
New Mixed Prints	3.20 @ 3.90
German Linen Blues	3.95 @ 4.90
German Linen, Gray	4.95 @ 5.95
German S. P. F.'s	3.45 @ 3.75
German Light Prints	2.10 @ 2.15
Dark Colored Cottons	1.60 @ 1.70

DOMESTIC RAGS

Recent large purchases by roofing makers have made considerable inroads in spot stocks and tended to strengthen values; dealers as a rule are holding supplies for higher prices. The scarcity of all kinds of rags has influenced a strong upward tendency on prices, and most dealers are looking for further sharp advances.

New Shirt Cuttings, No. 1	5.70 @ 5.90
New Shirt Cuttings, No. 2	3.65 @ 3.90
Fancy Shirt Cuttings	3.50 @ 3.80
New Blue Cottons	2.75 @ 3.20
New Dark Cotton	1.90 @ 2.00
New Unbld Cuttings	5.50 @ 6.00
New Black Cottons	2.00 @ 2.20
No. 1 Whites	3.15 @ 3.70
Soiled Whites, street	1.50 @ 1.65
Soiled Whites, house	2.15 @ 2.45
Thirds and Blues	1.70 @ 2.20
Satinette Garments	1.60 @ 1.65
No. 3 Satinettes	1.50 @ 1.55
No. 4 Satinettes	1.30 @ 1.35
No. 1 Tailor's Rag	1.25 @ 1.35

TWINES

The firm tendency of prices for all kinds of twines has been maintained during the past week and a further advance is looked for, based on the stronger primary markets for the raw materials. Prices of jute and hemp are rising owing to an active inquiry from England. Offerings of jute have been limited due in part to a growing scarcity of stocks in the hands of producers. The demand for both rope and twine from domestic buyers continues light, while for export a fair volume of sales has been booked. Scarcity of freight room and high freight rates tends to restrict trading on a larger scale in export lots. Orders for domestic account included parcels of both twines and rope, principally for immediate delivery. Prices closed nominally unchanged.

Sisal Hay	8½ @ 9
Sisal Lath Yarn	8 @ 8½
Manila Rope	12½ @ 13
Manila Rope, No. 2	11½ @ 12
Jute Rope	6¾ @ 7¼
Jute Wrapping Twines—	
2 to 6 ply—	
No. 1	12½ @ 13
No. 2	10½ @ 11
Jute Twines, 18	14½ @ 15
Jute Twines, 24	14¼ @ 14½
Jute Twines, 36	13¼ @ 13¾
Jute Twines, 46&60	13¾ @ 14
Jute Twines, 4½&6	9 @ 9½
Paper Makers' Twine	8 @ 8½
B. C. Hemp, 18	19½ @ 19¾
B. C. Hemp, 18	19 @ 19¼
B. C. Hemp, 36	18½ @ 18¾
Amer. Hemp, 4½&6	17 @ 17½

OLD PAPERS

Quotations are stronger and higher under an improved demand and in some cases sharp advances have featured the market throughout the week. The better qualities and also varieties used by board mills have sold more freely and at full asking prices. In most instances dealers are looking for a general increase in the demand for all kinds of paper to be followed by a gradually advancing market. Collections have been larger but are still below normal when compared with the corresponding period of last year.

Continued on page 36

Telephone {1700 / 1701} Broad Cable Address, "Lagerlot Newyork"
Scandinavian-American Trading Company
PRODUCE EXCHANGE BUILDING, NEW YORK
IMPORTERS AND EXPORTERS OF
FOREIGN AND DOMESTIC
WOOD PULP
OF ALL KINDS
AND
PAPER MILL SUPPLIES
HANS LAGERLÖF, Pres.

Use Positive Filling

Reduce Manufacturing Cost and Increase Production

It only takes three wedges and six anchor bolts to hold them

HOW can you get the crushing brushing effect on your fibers when the steel bars in your Wood and Steel filled Jordan Engine deteriorate to a knife edge, caused by chemicals in your stock? Use our Positive Fillings; they stay up square, and are not affected by the chemicals in your stock.

Correspondence from any mill invited

BAHR BROTHERS MANUFACTURING CO.

211 I. O. O. F. BUILDING MARION, IND.

SINCE 1878

BUCHANAN & BOLT WIRE CO.

HOLYOKE, MASS.

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FINE WIRES FOR MAGAZINE AND BOOK PAPERS

Dandy Rolls, Cylinder Covers
Highest Grade Fourdrinier Wires

Brass Wire Cloth of all Meshes for Paper, Pulp and Coating Mills.

QUALITY GUARANTEED

CASTLE GOTTHEIL & OVERTON

Foreign & Domestic
RAGS & PAPER
STOCK
New Cuttings, Jute Stock
Sizing
SULPHITE &
SODA PULPS

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L. L. BROWN PAPER CO.

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Makers of First Class

LINEN LEDGER and RECORD PAPER

for Blank Books, Merchants, Bankers, Loose Leaf Ledgers and Permanent Records

Ledgers
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TRADE MARK

Brown's Papers have always received the highest awards whenever exhibited in competition with other makes

Mills established 1850

The Watermark of Quality

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SYDNEY MELBOURNE WELLINGTON BOMBAY

Parsons Trading Company

Paper Export
Pulp Import
Paper Stock

STOCKHOLM BUENOS AIRES HAVANA MEXICO

NEW YORK: 17 BATTERY PLACE

The Markets

Continued from page 34

No. 1 Hard White Shavings	2.45 @ 2.55
No. 2 Hard White Shavings	2.05 @ 2.15
No. 1 Soft White Shavings	1.70 @ 1.75
No. 1 Colored Shavings	.80 @ .85
No. 2 Colored Shavings	.60 @ .65
Magazine Flat Stock	.90 @ .95
No. 1 Crumpled	.70 @ .75
Solid Ledger Stock	1.75 @ 1.80
Ledger Stock	1.40 @ 1.45
White Blank News	1.05 @ 1.10
Extra Manila Cuttings	.90 @ .95
New Manila	1.30 @ 1.35
No. 1 Manila	.65 @ .70
No. 2 Manila	.35 @ .40
Box Board Chips	.30 @ .35
Bogus and Mill Wrappers	.42 @ .45
Strictly Overissue News	.50 @ .55
No. 1 Mixed Papers	.30 @ .32
Folded News	.35 @ .40
Common Papers	.25 @ .30

CHEMICALS

The firm tendency of prices covering the various paper-making chemicals has been well sustained under an active export demand and a general scarcity of spot supplies for prompt shipments. Bleaching powder on the spot is selling at 4¼ at 4⅞c a pound, but there were sellers at ¼c less; few contracts for domestic are being booked, owing to most of the producers being fairly well sold out and no interest is taken in possible contracts for deliveries of supplies over 1915. Offerings of caustic soda for prompt shipment are limited to small lots; inquiries from domestic and export buyers continue active, and this serves to hold values firm; for 1915 deliveries, sellers are quoting 2⅞c and upward on basis of 60 percent, while spot lots are held at 5⅜c and upward, as to terms of sale. Prices of sal soda are moving upward, but no quotable change was made up to the close of the market; sellers continue to ask .60c and upward for barrelled supplies f. o. b. shipping point; spot lots of concentrated are finding a steady outlet at 1¾c and upward, as to size of order. Prices of ammonia alum had been advanced owing to scarcity of potash varieties; holders are naming 4⅜c for ground, while high and low grades of alumina sulphate are being offered at 2c and upward and at 1½c and above, as to terms of sale. Brimstone is selling at $22 to $22.50 a long ton as to point of shipment. Advices from London note that exporters of china clay are greatly elated over the resumption of shipments to the United States without further interference; prices locally closed firm at $8 and over for domestic and at $12 and above for imported as to quality and quantity respectively; fair sales were booked for the week.

Imports—Rags and Paper Stock

AT NEW YORK.

Week Ended November 6, 1915.

MISCELLANEOUS PAPER STOCK

W. O. Davey & Co., str. Den of Airlie, London, 169 coils old rope.
A. Katzenstein, by same, 41 bs. new cuttings.
Salomon Bros. & Co., by same, 298 bs. rags.
Salomon Bros. & Co., str. Nieuw Amsterdam, Rotterdam, 97 bs. old bagging.
W. Hughes & Co., str. Francisco, Hull, 50 bs. jute waste, 23 bs. canvas cuttings.
Marx Maier, str. Westerdyk, Rotterdam, 101 bs. sound bagging, 32 bs. clean bagging, 547 bs. old bagging, 55 bs. jute bagging.
Salomon Bros. & Co., str. Rotterdam, Rotterdam, 285 bs. waste, 81 bs. rags.
Castle, Gottheil & Overton, by same, 55 bs. common bagging.
E. Butterworth & Co., by same, 63 bs. cotton rags, 79 bs. old pickers.
G. R. Stratford Oakum Company, str. Kansas City, Bristol, 38 coils old rope.
Brown Bros. & Co., by same, 470 coils old rope.
Muller, Schall & Co., str. Lord Devonshire, Havre, 127 bs. rags.
Castle, Gottheil & Overton, by same, 419 bs. rags.
E. Butterworth & Co., by same, 155 bs. rags.
Irving Nat'l Bank, str. Adriatic, Liverpool, 60 bs. paper stock.
Marx Maier, str. Lord Erne, Havre, 219 bs. rags.
Train, Smith & Co., str. Stabo, Manchester, 315 bs. old bagging.
Marx Maier, by same, 579 bs. old bagging.
E. Butterworth & Co., by same, 49 bs. old bagging.
M. O'Meara & Co., by same, 55 bs. old pickers.
Castle, Gottheil & Overton, by same, 180 bs. bagging.
L. Abenheimer & Co., by same, 64 bs. rags.
A. Katzenstein, by same, 105 bs. paper stock.

OTHER PORT MANIFESTS

AT NEWPORT NEWS

Scandinavian-American Trading Co., str. Noruega, Gothenburg, 2501 bs. (294 tons) woodpulp.

Continued on page 38

LOCKPORT FELT COMPANY
Newfane, N. Y.
Makers of
Fine Felts for Fine Papers
also makers of
Best Felts for ALL Papers
Satisfaction Guaranteed

Mendelson Bros. Paper Stock Company
Packers of all grades of
PAPER STOCK
General Offices: Karpen Bldg., 900 Michigan Blvd.
Daily Capacity 200,000 Lbs.
Packing Houses and Warehouses Chicago, - - Ill.
When you want quantity and quality in stock, write us.
Long Distance Phones Harrison 2840-5557

The better twines—those you can depend on—are
COLUMBIAN and EUREKA
COMMERCIAL TWINES
MADE FROM HEMP, JUTE AND FLAX
COLUMBIAN is our first quality—a better grade is not made.
EUREKA—second in quality to COLUMBIAN, but superior to many twines offered as "first quality."
COLUMBIAN ROPE CO.
2150-2175 Genesee St., "The Cordage City" AUBURN, N. Y.
Branches: NEW YORK CHICAGO BOSTON

WE GUARANTEE OUR SIZE TO BE ABSOLUTELY CLEAN
Shipped in barrels and tank cars
Our Vera Paper Size
is the purest, strongest and highest free rosin size made. We can furnish you with an ideal rosin size and patented apparatus to use same.
Our Vera Mill Size
is the best soluble paper makers' rosin size made. Ready to use in cold or warm water in the ordinary way without apparatus. Gives better satisfaction and is more economical than mill made size.
Our sizings are cleaned by our new patented process, and we guarantee this size to be absolutely clean, without the least speck of impurity in the same, preventing thereby black specks in the paper.
VERA CHEMICAL CO.
Main Office and Western Factory NORTH MILWAUKEE, WIS.
Eastern Factory STONEHAM, MASS.

J. L. & D. S. RIKER
INC.
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BLEACHING POWDER

Sole agents for the United States and Canada for the various brands manufactured by **The United Alkali Co., Ltd.,** England.

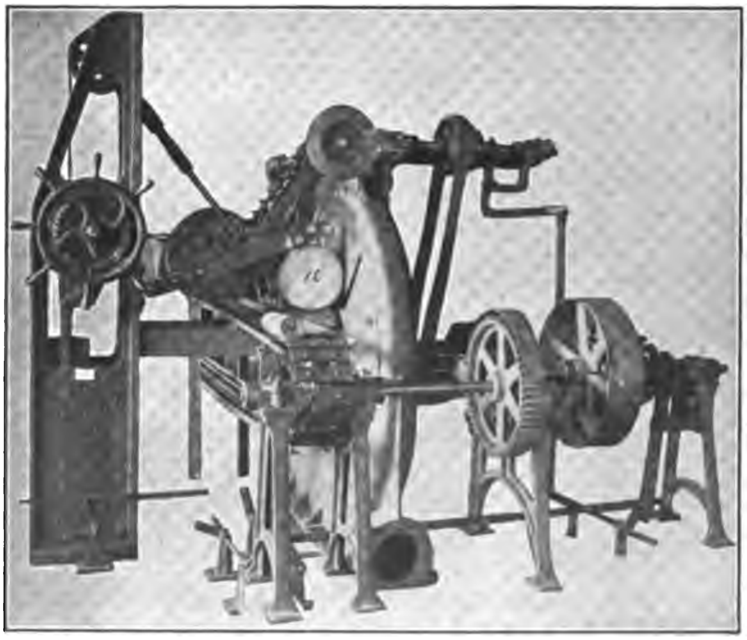
Sole agents for the
NIAGARA ALKALI CO.
Niagara Falls, N. Y.

The Orr Felt & Blanket Co.
PIQUA, OHIO

FELTS AND JACKETS
for Paper Manufacturers

FELTS WOVEN ENDLESS, AVOIDING TROUBLE WITH JOINS
TRIAL ORDERS SOLICITED

The LeMoine & Schafer Barker Attachment Barks Quicker, Better and Cheaper



Facts to Consider:

CONSIDER the facts regarding this Barker Attachment from *your own viewpoint*—the viewpoint of what it will do for you. The installation of this machine doesn't mean merely the addition of another machine to your equipment—it means installing a machine that *will* do better work, do it quicker and do it cheaper. It means making an *investment* that will return *dividends* in increased and better production at decreased costs.

Among the merits of the LeMoine & Shafer Barker Attachment are: Durability, Simplicity and Safety, Size and Adaptability.

Write us about it today

The Appleton Machine Co.
APPLETON, WIS., U. S. A.

The Markets

Continued from page 36

AT PHILIDELPHIA

General Roofing Co., str. West Point, London, 701 bs. rags.
Am. Pad & Textile Co., str. Manchester Miller, Manchester, 49 bs. waste bagging.
Baring Bros. & Co., by same, 119 bs. rags, bagging.
Morris Weil & Sons, by same, 47 bs. rags, bagging.
American Exp. Co., by same, 165 bs. paper stock.
Brown Bros. & Co., by same, 108 bs. new cuttings.
Dill & Collins, str. Maine, London, 234 bs. waste paper.
Baring Bros. & Co., by same, 107 bs. waste paper.

Sacks Made of Paper Compete With Jute

The warp and woof of the fabric of a sack that is now being used to some extent to ship ores from Antofagasta, Chile, are made of strips of paper doubled or twisted, in combination with a small quantity of some short vegetable fiber. These sacks come from Germany and have competed with the jute sacks brought from India. Before the war sacks sold for about 14 cents each, but are now worth about 24.3 cents each. The scarcity of vessels to bring jute sacks from India is the cause of the rise in price.

It is stated that these paper sacks will stand hard usage and be available for several shipments before wearing out. Their use is just beginning at Antofagasta, U. S. Consul Voetter says, in a report to the Department of Commerce, under date of September 23.

A. G. Maury With W. H. Bowes Company

Arthur G. Maury, former treasurer and assistant secretary of the American Paper and Pulp Association, has recently formed a connection with the Walter H. Bowes Company, Inc., sole selling agent for the Dodge Gravity-Evacuator, with offices at 30 East Forty-second street, New York.

Mr. Maury's former connections with the American Paper and Pulp Association and the International Paper Company have given him opportunities for making many highly prized acquaintances in the industry, and these should be of immense advantages to him in his new field of work.

Schmidt & Ault Acquires G. M. Wetmore

The Schmidt & Ault Paper Company, York, Pa., announce that G. M. Wetmore, formerly general manager of the Selbert Paper Company, of Cincinnati, Ohio, has accepted the position of general salesmanager of their company.

Mr. Wetmore has had considerable experience in the paper business and has spent the greater portion of his business life in the sales department of Herrlinger & Co., of Cincinnati.

Mr. Wetmore comes to his new field of work with the strong endorsement of those who have known him both in a business and social way. He succeeds C. H. Strayer who has resigned to accept another position. Mr. Wetmore will assume his duties November 10.

Machine tenders and beatermen out of a position can get in touch with employers by using the Classified Ad page of PAPER.

Improved Paper Machinery Co.
NASHUA, N. H., U. S. A.
PULP and PAPER MAKING MACHINERY
Wet Machines—Pulp Thickeners—Pneumatic Save-All
SPECIAL Couch, Press and Suction Rolls
CORRESPONDENCE A PLEASURE

THEODORE HOFELLER & CO., Buffalo, N. Y.
Carefully Assorted Paper Stock, Rags and New Clippings
BUYERS OF
Brass Wire Cloth, Brass Screen Plate, Scrap Brass, Paper Mill Felt, Bagging and Burlap Baling, Second Hand Bags

"DRYDEN" KRAFT PULP EXTRA STRONG LONG PURE SULPHATE FIBRE
DRYDEN TIMBER & POWER CO., LTD. DRYDEN, ONTARIO

HIGH SPEED STEEL tools have reduced cost of many machine shop operations.

SPECIAL ALLOY FLY BARS do the same for paper mills, and cost less to use than ordinary bars.

DILTS MACHINE WORKS, Inc. FULTON, N. Y.
BEATING ENGINES MACHINE KNIVES

We own and operate the plant formerly belonging to Taylor Bros. & Co., Machine Knife Manufacturers since 1848

-W- **Waterbury Felts and Jackets** -W-

ARE MADE AT

1869 **ORISKANY, N. Y.** 1915

Waterbury Tight-Fitting Diamond -W- Jackets
run safely, and will not lick up at any speed.

H. Waterbury & Sons Co., Oriskany, N. Y.

Remember This Name!

Kalamazoo Vegetable Parchment Co.

The men who make our Vegetable Parchment paper have spent a lifetime in the paper business. Their efforts have resulted in our

"Best Brand" Vegetable Parchment

made in the world's biggest and finest mill. Water, blood, grease and germ proof. We also made all kinds of "better" Waxed Paper. Write for samples and prices.

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

The Riordon Pulp & Paper Company, Limited
Montreal

We find the demand for

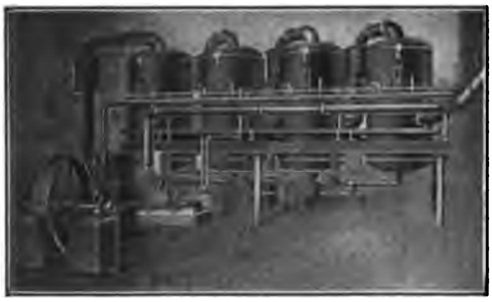
Hawkesbury Unbleached Sulphite Fibre

has become very much stronger with the near approach of Fall business. Our large production of 150 tons per day at this mill offers especial protection for those mills who prefer regular monthly shipments without the necessity of storing heavy quantities at their mills.

We invite your confidence

Hawkesbury mill, 150 tons per day *Merriton mill, 30 tons per day*

T. J. STEVENSON, GEO. E. CHALLES—*Sales Managers*



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SODA, SULPHATE & SULPHITE

Spent Liquors give the Maximum Economy and Efficiency

The PRINCIPLE, The DESIGN,
The CONSTRUCTION, The OPERATION,
The RESULT,

IS RIGHT

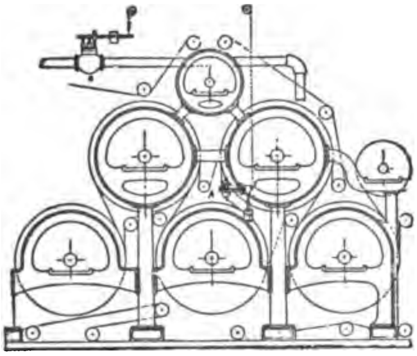
Complete installations made by "The Firm With The Experience"

ERNEST SCOTT & CO., Manufacturing Engineers
FALL RIVER, MASS.

THE PICKLES DRYING REGULATOR

Reasons why you should have it on your machine are: First, it regulates the drying of paper automatically, irregularities are eliminated; second, higher machine finished papers are attainable, because it is possible to maintain the proper quantity of moisture in sheet, as it passes to calenders; third, mills having tried it on one machine have ordered it for all their machines. Full particulars upon application to

W. F. PICKLES, - Buckland, Conn.



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SUCTION PLATES BABBITT METAL
Sole Manufacturers of
The Hodgdon Screen Plate Fastener
New in Principle Efficient in Service Simple in Operation
NO BEVELED BARS HARDY NO DRAW BARS

Not a single part to be removed in taking out or putting in the plates except the sealing strips.

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Manufacturers of
BONDS
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Headquarters Bureau of Statistics

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Williams, F. M., Watertown, N. Y.

PAPER MILL ENGINES

International Process Co., New York.
Westinghouse Machine Co., E. Pittsburgh, Pa.

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Aterbury Bros., Inc., New York.
Hofeller Co., Theodore, Buffalo, N. Y.
Mendelson Bros. Paper Stock Co., Chicago, Ill.
Parsons Trading Co., New York.
Salomon, Felix & Co., New York.
Wilkinson Bros. & Co., New York.

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Perkins, B. F., & Son, Holyoke, Mass.

PAPER THICKNESS GAUGES

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Ticonderoga Machine Co., Ticonderoga, N. Y.

PASTING AND SATURATING MACHINERY

Atterbury Bros., Inc., New York.

PORTABLE ELEVATORS

Economy Eng. Co., Chicago, Ill.

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General Electric Co., Schenectady, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan, Co., York, Pa.

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(Brass and Copper)

Voith, J. M., New York.

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Clens Falls Machine Works, Glens Falls, N. Y.

PULP WASHERS

Glens Falls Machine Works, Glens Falls, N. Y.

PUMPS

Black-Clawson Co., Hamilton, O.
Buffalo Forge Co., Buffalo, N. Y.
Holyoke Machine Co., Holyoke, Mass.
Glens Falls Machine Works, Glens Falls, N. Y.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Terry Steam Turbine Co., Hartford, Conn.
Wheeler, C. H., Mfg. Co., Philadelphia, Pa.

RAG CUTTERS

Black-Clawson Co., Hamilton, O.
Noble & Wood Machine Co., Hoosick Falls, N. Y.
Perkins, B. F., & Son., Inc., Holyoke, Mass.

RAGS

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Hofeller & Co., Theodore, Buffalo, .N Y.
Wilkinson Bros. & Co., Inc., New York.

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General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

REFINERS

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Voith, J. M., New York.

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Field, William T., Watertown, N. Y.

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Farnham Mfg. Co., Buffalo, N. Y.
Farrell Foundry & Machine Co., Ansonia, Conn.
Noble & Wood Machine Co., Hoosick Falls, N. Y.

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Boston Belting Co., Boston, Mass.

ROSIN SIZE

Arabol Mfg. Co., New York.
National Rosin, Oil & Size Co., New York.
Vera Chem. Co., N. Milwaukee, Wis.

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Scott, Ernest, & Co., Fall River, Mass.

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SAVE-ALLS

Glens Falls Machine Works, Glens Falls, N. Y.

SCALES

Howe Scale Co., New York.

SCREENS

Appleton Wire Works, Appleton, Wis.
Black-Clawson Co., Hamilton, O.
General Electric Co., Schenectady, N. Y.
Harmon Machine Co., Watertown, N. Y.
Improved Paper Machinery Co., Nashua, N. H.
Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.
Voith, J. M., New York.

SCREEN PLATES

Hardy & Sons, Wm. A. Fitchburg, Mass.
Union Screen Plate Co., Fitchburg, Mass.

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Hardy & Sons Co., Wm. A., Fitchburg, Mass.

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Oxford Paper Co., New York.
Parsons Trading Co., New York.
Ticonderoga Pulp & Paper Co., Ticonderoga, N. Y.
West Virginia Pulp & Paper Co., New York.

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American Spiral Pipe Works, New York.

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Berlin Mills Co., Portland, Me.
Quebec & St. Maurice Industrial Co., New York.

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Eastwood Wire Mf. Co., Belleville, N. J.
Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Stebbins Eng. & Mfg. Co., Watertown, N. Y.

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Andersen & Co., J. New York.
Atterbury Bros., Inc., New York.
Berlin Mills Co., Portland, Me.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Dexter & Bowles, Springfield, Mass.
Parsons Trading Co., New York.
Pulp & Paper Trading Co., New York.
Riordon Paper Co., Montreal, Canada.
Salomon, Felix, & Co., New York.
Scandinavian-American Trading Co., New York.
West Virginia Pulp & Paper Co., New York.

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Union Sulphur Co., New York.

SULPHUR BURNERS

Glens Falls Machine Works, Glens Falls, N. Y.
Stebbins Eng. & Mfg. Cc., Watertown, N. Y.
Valley Iron Works Co., Appleton, Wis.

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General Electric Co., Schenectady, N. Y.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

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Wheeler Mfg. Co., C. H., Philadelphia, Pa.

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Glens Falls Machine Works, Glens Falls, N. Y.
Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.

WATER SOFTENING AND PURIFYING SYSTEMS

Hungerford & Terry, Inc., Philadelphia, Pa.
Scaife & Sons Co, Wm. B., Pittsburgh, Pa.

WATER WHEELS

Holyoke Machine Co., Holyoke, Mass.
Smith, S. Morgan Co., New York.
Voith, J. M., New York.

WAXED PAPER

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

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(*Arc*)

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Dilts Machine Wks., Inc., Fulton, N. Y.
Glens Falls Machine Works, Glens Falls, N. Y.
Valley Iron Works Co., Appleton, Wis.
Voith, J. M., New York.

WIRES

Appleton Wire Work, Appleton, Wis.
Buchanan & Bolt Wire Co., Holyoke, Mass.
Cabble, Wm. Ex. Wire Mfg. Co., New York.
Eastwood Wire Mfg. Co., Belleville, N. J.
General Electric Co., Schenectady, N. Y.
Gleeson, Thos. E., Inc., East Newark, N. J.
Lindsay Wire Weaving Co., Cleveland, O.
Wisconsin Wire Wks., Appleton, Wis.

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Advertisements for this page will be accepted at the rate of 10 cents a line, each insertion, cash to accompany order. A line averages seven words.

There is no quicker, cheaper or better way of filling your wants than through this Classified Section.

Situations Wanted

EMPLOYERS WANTING HELP should send a statement of their requirements to the Labor Bureau of PAPER, 117 East 24th street, New York City. Applications for work are constantly being received from men in all parts of the country.

Designer

CAPABLE DESIGNER, technical graduate, now employed, with 7 years' special experience on most modern paper machinery, desires change. Can give best references. Address K. S., care of PAPER.

Mechanical Engineer

MECHANICAL ENGINEER AND DRAFTSMAN desires position. Ten years experience in paper machinery shops, paper and pulp mills. Mill preferred. Address J. E. H., care of PAPER.

Boss Machine Tender

BOSS MACHINE TENDER would like position in mill in the middle west. Either day or night job. Experienced in all grades of paper. Address Boss, care of PAPER.

Head Finishers

EXPERIENCED HEAD FINISHER at present unemployed would like to get position. Experienced on tissues and light and heavy papers. Married; reliable. When writing please state wages, number of machines, etc. Address E. C. B., care of PAPER.

HEAD FINISHER perfectly sober and reliable wants position. Has had considerable experience on supercalender book, manilas, dry finish wrappings, bonds, flat writings etc. Is practical supercalender man and has had some experience on tissues. Could qualify as mill salesman or assistant superintendent. Age 37; married. Can furnish excellent references. Address Finish, care of PAPER.

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FIRST-CLASS MILLWRIGHT wants position in a paper mill; steady and reliable; references; state salary when writing W. M. S., care of PAPER.

Superintendent

EXPERIENCED SUPERINTENDENT desires position in that capacity in a paper mill. Will consider position as assistant. Started in paper trade at the bottom and has been engaged in that trade for twenty years. Has been tour boss and night superintendent with good records. Sober and reliable. References if desired. Write Assistant, care of PAPER.

Situations Vacant

PAPERMAKERS OUT OF WORK, machinetenders, beatermen and millwrights out of a position, are invited to send their qualifications, requirements as to salary, etc., to the Labor Bureau of PAPER, 117 East 24th street, New York City. Openings now exist for several workers.

Back Tender

MACHINE TENDER, BACK TENDER and also rewinder man on small rolls are wanted in an Eastern mill running on two shifts. Interested parties may get particulars, etc., on writing Machine Tender care of PAPER.

Millwrights, Pipers, Machinists

A DOZEN GOOD MILLWRIGHTS, two or three firstclass pipers, and two or three good machinists or lathe hands can hear of good paying positions by writing S. R. P., care of PAPER.

Paper Finisher

WANTED—Position by paper finisher who has had four years experience in counting, tieing, sealing and cutting paper. Address Drawer T, Buena Vista, Virginia.

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SALESMAN with experience in selling wrapping, toilet or tissue papers direct mill shipments, will be offered an excellent opportunity to connect with house offering liberal inducement. State full particulars of experience, lines handled and yearly sales. Commission basis. Address X. Y. Z. care of PAPER.

WANTED a folding paper box salesman who can command a trade in New York State. Only an A. No. 1 man need apply. State age, with whom connected, salary expected. Such information will be treated confidentially. Address L. G. care of PAPER.

Order and Routing Clerk

WANTED—Competent order and routing clerk in a western Massachusetts mill making writings and specialties. State full experience and salary wanted. Address Clerk, care of PAPER.

Chemical Engineer

WANTED—Energetic chemical engineer with knowledge of glue, glycerine, glycerine substitutes and paper. State age, experience and salary expected. Address 663 care of PAPER.

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WANTED—PAPER's Labor Bureau has an application for a draftsman who has had good experience in paper mill work and is competent to take charge of any work in the mechanical end of a large plant. Those qualified to fill a position of this kind should send particulars of experience, etc., to Rogers, care of PAPER.

For Sale—Machinery

FOR SALE—Three Matthews Patent Compensating Winders—Four shaft—for 128" machine. Big bargains. Write Champion Fibre Company, Canton, N. C.

FOR SALE—44-inch paper slitter and rewinder. Address, Hubbs & Corning Co., Baltimore, Md.

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FOR SALE—A Mullen paper tester. Has been out of the shop but two years and used very little. Cost $75.00, will sell for $50.00. Address T. S. Morris Company, Madison, Wis.

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We enumerate below only a partial list. Write us if there is anything else you want.

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